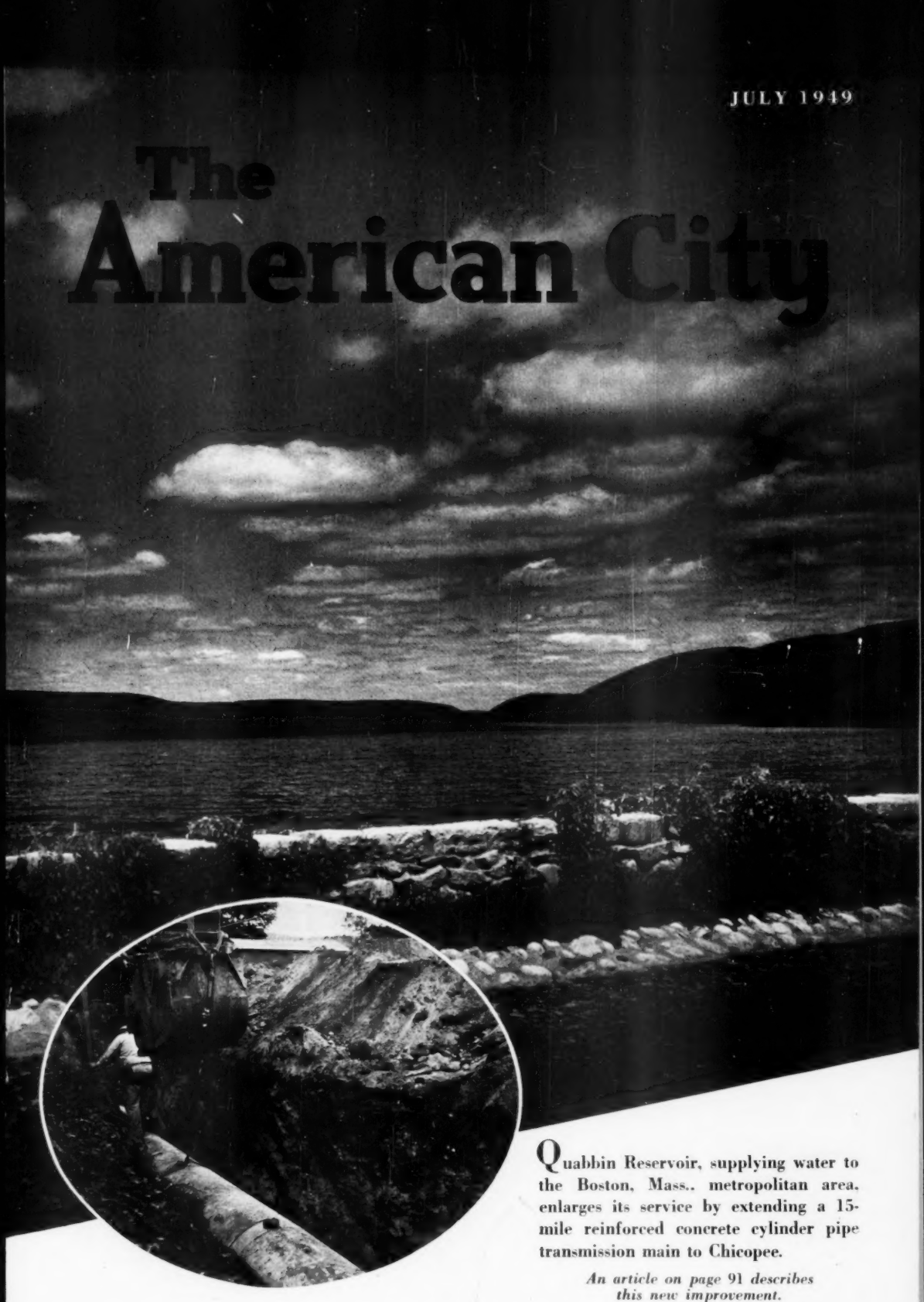
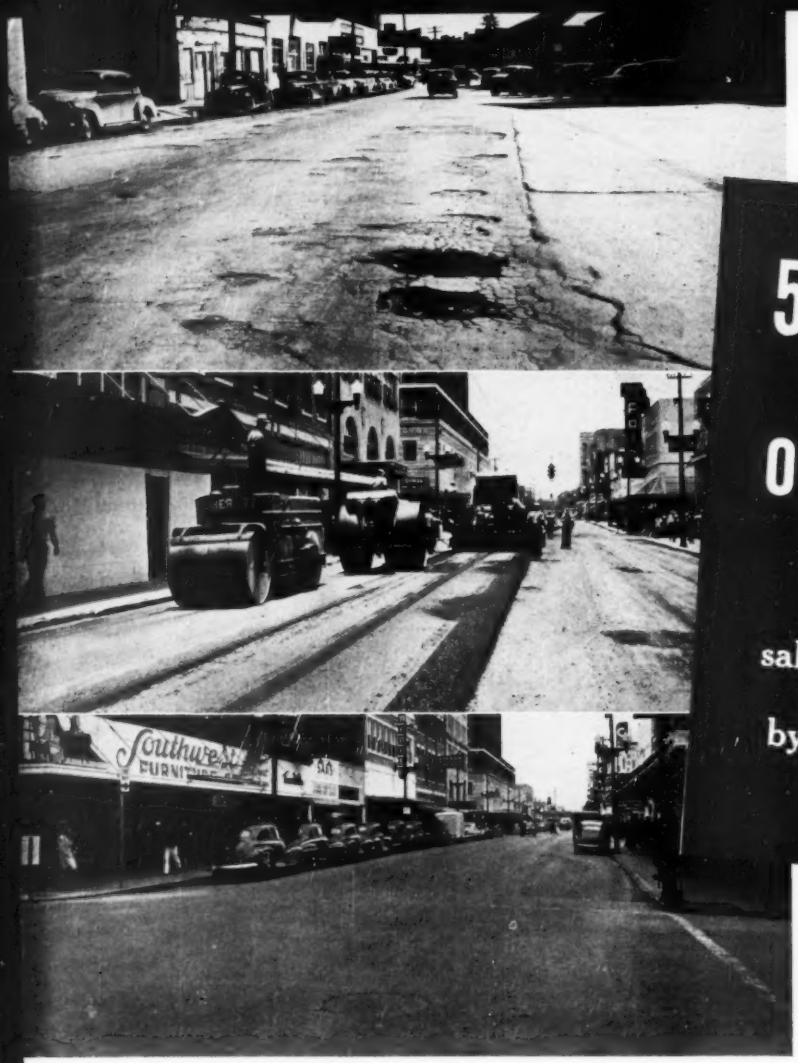
JULY 1949

The American City



Quabbin Reservoir, supplying water to the Boston, Mass., metropolitan area, enlarges its service by extending a 15-mile reinforced concrete cylinder pipe transmission main to Chicopee.

An article on page 91 describes this new improvement.



50 miles of old streets

salvaged with Texaco by Beaumont, Texas

Photographs show the deteriorated condition of a Beaumont street before surfacing; method of constructing the new Texaco Asphaltic Concrete wearing surface by Trotti and Thomson of Beaumont; and one of the city's newly paved streets.

City officials of Beaumont faced a problem common to many other cities today. A large mileage of their streets had deteriorated badly, due largely to unavoidable wartime neglect. To rip up and replace those old streets would involve a prohibitive cost. Aside from the cost obstacle, it was found that entirely new construction was unnecessary.

Beaumont's solution to the problem has been to resurface 50 miles of its old streets with a resilient, heavy-duty wearing surface of Texaco Asphaltic Concrete, after correcting serious base failures. For a small fraction of the cost of entirely new paving, the city has provided motorists with a network of durable, easy-riding, skid-resistant streets. The general appearance of the community has been greatly enhanced, as a result of this economical street improvement program.

American cities have been solving their street construction and maintenance problems with Texaco Asphalt products for the past 44 years. More than 1,500 cities from the Atlantic seaboard to the Rockies have paved with Texaco to date.

For copies of two helpful booklets which describe all types of Texaco Asphalt surfacing suitable for city streets, write our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

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TEXACO REG. T.M.

TEXACO ASPHALT

Index to Contents of This Issue

AERIAL SURVEYS
What Cleveland Gained by Aerial Surveys 81

AIRPORTS AND AVIATION
Airport Zoning Needed 95

BUILDING INSPECTION
Lower Merion Township Uses Mailing Cards for Simplified and Systematic Building Inspection 118

CITIZENS AND GOVERNMENT
State and Regional Community Institute Planned 97
The City Tells Its Story 110

CONFERENCES AND CONVENTIONS
MIT Planning Conference 5
Conventions—When and Where 137

COUNCIL-MANAGER PLAN
Recent City Manager Appointments 121

FINANCE AND TAXATION
Pennsylvania's Famous "Tax Anything Act" is Limited by 1949 Legislature .. 5
Coordination of Municipal and School Budgets Urged 9
Municipal Finance Officers and Clerks Hold Successful Meetings..... 9
Out of the Financial Doldrums and Into a Tornado 96
Financing Municipal Public Works 104

GOVERNMENT AND ADMINISTRATION
The Battle for Municipal Home Rule Must Go On 83
Out of the Financial Doldrums and Into a Tornado 96
Lower Merion Township Uses Mailing Cards 118

HIGHWAYS
Auto Speedway or Parkway? 88

HOUSING
At Last! House Passes Housing Bill..... 7
New Jersey Enacts Redevelopment and Housing Legislation 7

INTERNATIONAL RELATIONS
Trade Mart Attracts Latin American Commerce to New Orleans 109

LAWS AND LEGAL DECISIONS
Zoning and Planning Notes 119
Legal Notes and Decisions 120

LIGHTING, OUTDOOR
The Case Against Inadequate Visibility .. 123
Safety and Appearance Feature Completed Lighting Program 125
Brightest Lights Against Thickest Fog .. 127
Bigger Lamps—Twice as High Up in Rawlins, Wyo. 127
New Lights and Bleachers for Canton Fields 127

NEWS AND ILLUSTRATIONS
Items from Manufacturers 147

NUISANCES
Increase of Needless Din Requires Action by Cities 121

OBITUARIES
They Left Us a Legacy of Finer Communities 114

PERSONNEL PROBLEMS
Essential Features of a Model Retirement System for Municipal Employees 84
More Cities Adopt Retirement Plans ... 85
Employees Organize in Growing Number of Cities 121

PEST CONTROL
Greenwich, Conn., Controls Dutch Elm Blight 112

PLANNING AND ZONING
New Jersey Enacts Redevelopment and Housing Legislation 7
What Cleveland Gained by Aerial Surveys 81
Auto Speedway or Parkway?..... 88
Airport Zoning Needed 95
State and Regional Community Institute Planned 97
British Movie Explains the "New Town" 109
Congress Acts to Preserve Character of Greenbelt Towns 113
Somerville Students Compete in City Planning 115
Zoning and Planning Notes 119

POWER
New Diesel Plant is Almost Noiseless .. 106

PUBLIC HEALTH
Roster of Sanitary, Public Health Engineers 121

PUBLIC RELATIONS
The City Tells Its Story 110

PUBLIC SAFETY
Bicycle Taxation and the Safety Program 15
Fiery Hydrants 15
Seattle Coped with Disaster 15
To Share State Service 15
Gospel of Highway Safety—Will You Apply It? 129

PUBLIC WORKS PROGRAMS
Planning, Equipment Clinic are APWA Program Highlights 100
Financing Municipal Public Works 104

QUIZ
The American City Quiz 5

REFUSE COLLECTION AND DISPOSAL
What About Garbage Grinders for Commercial Establishments? 13
Indiana Legislation on Garbage Grinders 17
Use of Refuse Fees Shows Increase 17
Kansas City, Mo., Develops Garbage-Cooking Program to Feed Hogs 98

SALARIES
Municipal Employment and Payrolls Continue Upward; Debt, Too 5
Essential Features of a Model Retirement System for Municipal Employees 84
More Cities Adopt Retirement Plans 85

SCHOOLS
Coordination of Municipal and School Budgets Urged 9

SEWERAGE AND SEWAGE TREATMENT
Asks State Participation in Pollution Control 13
State Provisions Relating to Water and Sewer Districts 13
What About Garbage Grinders for Commercial Establishments? 13
Indiana Legislation on Garbage Grinders 17
Smaller Sewage-Treatment Plants . . . and Better 92
Digester Design Improvements 116

STREET CLEANING
Street and Sidewalk Flushing 17

STREET CONSTRUCTION AND MAINTENANCE
Deflectors Boost Capacity of Street Inlets 18
Sheet Asphalt Uses Coarse Sand, No Rack 18
How Beaumont, Texas, Reclaimed Its Streets 86
Detroit, Mich., Develops Economical Asphalt Street Maintenance 101

TRAFFIC CONTROL AND FACILITATION
When By-Passes Do Not By-Pass and Highway Access Is Not Controlled ... 83
Auto Speedway or Parkway? 88
Gospel of Highway Safety — Will You Apply It? 129
2,423 Highway Deaths in New Jersey in 10 Years 131
Community Importance of Trucking Operations 131
Philadelphia Reduces Traffic Fatalities .. 131
Trolley Coaches Indicated for All Milwaukee's Remaining Street-Car Lines.. 133
Many Facts on Parking Meters 135
Take Less Space in Mass Vehicles 135

URBAN REDEVELOPMENT
At Last! House Passes Housing Bill..... 7
New Jersey Enacts Redevelopment and Housing Legislation 7

VOTING MACHINES
Comments from Readers About Voting Machines 145

WATER SUPPLY AND TREATMENT
Council Bluffs Tank Uses Cathodic Protection 11
How It Will Look 11
London Adopts Superchlorination 11
The Surface Supply That Failed 11
Chicopee, Mass., Connects to Metropolitan Boston Supply 91
AWWA Meeting and Discussions 94
Water Works Men Outline Fluoridation Procedure 108

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THE MUNICIPAL INDEX and ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. This 867-page annual is published by The American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y.

See pages 21, 23, 25, 27, 29, 30, 32, 34, 139, 141, 143 for catalogs and publications on municipal and civic subjects

List of coming convention, page 137 **Index to Advertisers, page 200**

TELEPHONE SERVICE KEEPS RIGHT ON IMPROVING

Long Distance is faster. Calls go through on the average in 1.6 minutes—nine times out of ten while you hold the line.

Local Service is better. The operator answers or the dial tone comes on faster than at any time since before the war. Calls go through promptly and accurately.

Equipment troubles are fewer than ever. Those reported by customers have decreased 15% from a year ago.

THE big construction program of the Bell System has resulted in important improvements in telephone service, and has brought telephones to millions of people who did not have them before.

Thousands of miles of new Long Distance lines have been added. Many cities are now linked by networks which can carry both voice and television. New and modern Western Electric equipment—the finest that can be made — is giving better, clearer, faster service to millions of telephone users, on every kind of call.

There has never been so great an expansion and improvement in telephone service as in the past three years. Still more good things are ahead for we're keeping right on with the job.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Municipal Employment and Payrolls Continue Upward; Debt, Too

THOUGH cause and effect should not be imputed to the figures, two recent Census Bureau reports show significant rises in both municipal government employment and payroll totals and local-government debt outstanding.

According to the report *City Employment in 1948*, approximately 1,249,000 persons worked for municipal governments in October 1948, or 47,000 more than in October 1947. Monthly payrolls of municipal governments rose to $266,000,000 in October 1948, a figure which is 13% higher than that for October 1947.

The report, *Governmental Debt in 1948*, points out that local government gross debt of $15,000,000,000 outstanding in 1948 is higher than the level of any of the four preceding years, although it is far below the comparable 1932 and 1940 debt totals of $16,700,000,000. Municipal government gross debt of $8,643,000,000 in 1948 included $4,116,000,000 for municipally owned enterprises. Special districts throughout the nation owed $2,950,000,000, of which $2,100,000,000 was for public enterprises. School districts, counties, and townships accounted for the remainder of local-government indebtedness.

Municipal payrolls have increased at least 13% each year since 1945, the Census Bureau reports. While the number of city employees has been rising steadily for several years, city payrolls have increased at a much more rapid rate. Average monthly earnings of city employees have risen from $178 in 1946 to $197 in 1947 and $213 in 1948, reflecting increased pay rates.

Municipalities account for one-fifth of all public employment and payrolls. They have more than one-half as many employees as the federal government, far more than counties, school districts, or any other type of local government, and considerably more than state governments.

Per capita debt figures for federal, state, and local governments show that federal debt in 1948 was equal to $1,721, comparing with $1,908 two years before, and $156 in 1932. Indebtedness of the 48 states amounted to $25 per capita in 1948, as against $17 in 1946, and $23 in 1932. Local-government debt per person equaled $102 in 1948, as compared with $96 the previous year but with $134 in 1932.

Pennsylvania's Famous 'Tax Anything' Act Is Limited by 1949 Legislature

PENNSYLVANIA'S two-year-old famous "tax anything" or "home rule" local-tax law, Act 481, was somewhat limited and the powers contained in it were curtailed during the 1949 session of the Pennsylvania legislature when an amending bill was enacted. The amendments clarified local-government relationships and taxing powers, but still leave Pennsylvania localities with a wider range of revenue sources than in most other states.

The original law granted local governments power to impose levies on anything not being taxed by the state. Among the major features of the amended law are: a general ceiling limiting revenue of any one municipality from taxes authorized under the law to the income which would be received from a 10-mill tax on real estate. The school-district ceiling is that income equal to a 15-mill levy.

Also, school districts may no longer impose their wage tax on non-residents. Municipalities will retain power to impose a tax on earnings inside their boundaries by residents and non-residents alike, though a 1% ceiling exists on such levies. Severance taxes on coal and other natural resources, along with farm and manufactured products, have been removed from local tax authority. Limitations were imposed on mercantile, amusement, and per capita taxes permitted under the law. Provisions are made for half-rate levies when two municipalities impose the same tax on a person or enterprise, and joint agreements are authorized between political subdivisions, for tax collection purposes.

A memorandum contained the full text of Act 481, as amended by the Pennsylvania legislature during the 1949 session, is available from the Pennsylvania State Chamber of Commerce, State Chamber Building, Harrisburg, Pa.

The American City Quiz

Match Wits With the Experts

QUESTIONS

1. *Does any incinerator produce steam for sale in the burning operation?*
2. *What manpower is required to operate a sanitary fill?*
3. *How frequently should joints be placed in concrete pavement?*
4. *What effect will household garbage grinders have on sewerage systems?*
5. *What top limit should be placed on the hydrogen sulphide content of sewage sludge gas used in internal combustion engines?*
6. *Is there any way to prevent loss of groundwater by seepage short of placing sheet piling or similar rigid barriers?*
7. *How do fire losses today compare with previous years?*
8. *What is the economic life of a parking meter?*
9. *What type of refuse-collection program should be used in a business district?*
10. *When can the reclaiming of lime sludge from a softening plant be considered a profitable undertaking?*

(Answers on page 9)

MIT Planning Conference

A short conference in city and regional planning will be held at the Massachusetts Institute of Technology in Cambridge, Mass., during the two weeks beginning Monday, September 12. The intensive course will be open to those who have had practical experience in planning or in a related field, including planning commission or staff members, housing authority members, and engineering or public works department staffs. The conference fee is $50. Write to Professor F. J. Adams at MIT not later than September 2.

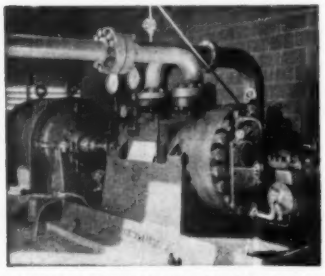
FIDO BLAZES NEW ERA OF AVIATION SAFETY

FIDO, born in war, guards against fog

Mayor Fletcher Bowron lit the pilot light and Los Angeles was cooking on the front burner in world aviation circles at the inauguration of FIDO (Fog, intensive dispersal of) for the Los Angeles Municipal Airport.

Pushing a bright red button, the Mayor flashed on Los Angeles' $842,000.00 fog dispersal system and this field became the first all-weather commercial airport in the world. Brilliant orange flames leaped up simultaneously into the dusk from the burners outlining the approach and runway.

Backed by 5 millions spent in research by the Army, Navy, and civilian interests,



BYRON JACKSON "FIDO" PUMP INstalled at Los Angeles Municipal Airport.

ORIGINAL BYRON JACKSON "FIDO" pump installed at Arcata, Northern California, in 1945.

PLANELOAD OF NEWSMEN AND PHOTOGRAPHERS MAKE PERFECT TOUCHDOWN while Los Angeles FIDO system singes off imaginary fog in first acceptance test of fog dispersal system. FIDO system pumps cheap diesel fuel to atomizers spaced along 6,000-ft. flame rows.

FIDO assures airport operation at zero ceiling. The sky-pointed flame throwers are designed to burn off fog to heights of 400 feet in the 2000-foot approach zone, to 250 feet in the 1000-foot landing zone, and from 75 to 300 feet over the 3000 feet of remaining runway.

More than six miles of fuel pipelines outline the FIDO landing area. The heart of this system is located in a small quonset hut. Here, the Byron Jackson 1000 hp FIDO Pumps keep a pressure of 1200 pounds per square inch in the system. The pressures involved make possible complete combustion and the height of flame at the atomizers.

In lauding the Board of Airport Commissioners and others who had worked out this latest safety device for aviation, Mayor Bowron declared it is "this spirit which is hastening the day when we will have the world's safest airport."

"Air travelers throughout the world," said Bowron, "soon will know they will always land on schedule at Los Angeles."

This advertisement conforms to the splendid coverage given this event, March 30, 1949, by the Los Angeles Daily News.

MAYOR FLETCHER BOWRON LIT THE pilot light that made aviation history. With him (right) is Col. Clarence M. Young, General Manager of the Los Angeles Municipal Airport.

Byron Jackson Co. designs, builds, and installs every type of centrifugal pump for city, farm, and industrial requirements. For complete information, write for illustrated BJ Bulletins describing the pumps you need.

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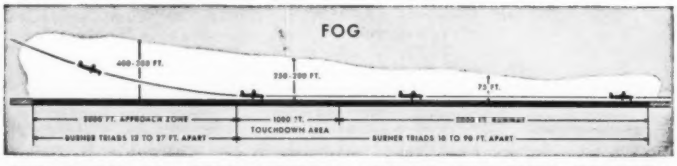


THIS IS HOW LOS ANGELES MUNICIPAL AIRPORT'S FIDO SYSTEM WILL BURN away zero ceilings, permit planes to land with safety, and effect bad weather economies.

N. J. Enacts Redevelopment and Housing Legislation

CITIES in several states were aided with their housing and redevelopment problems as the result of action by the 1949 sessions of their respective state legislatures. New Jersey municipalities received probably the most effective tools for an attack on blighted areas and slum conditions.

One of the most comprehensive and forward-looking state-enabling acts for urban redevelopment was adopted at a special session of the legislature in June, together with other bills in Governor Alfred E. Driscoll's housing program. These provide for a referendum in November on a $100,000,000 state bond issue to finance low-cost home and apartment projects; set up a State Housing Council of five members responsible for the program; and authorize 2% loans to private builders to encourage them to take the initiative in relieving the housing shortage. Municipal housing authorities operating under the program will be required to give first preference to families facing eviction because of slum-clearance projects, with second preference to World War II veterans.

The new redevelopment law authorizes municipalities to establish separate redevelopment agencies, with condemnation and land-assembly powers over blighted areas as they are so determined, and plans for their redevelopment adopted by municipal governing bodies in relation to over-all municipal master plans. Such agencies are not empowered to construct any buildings themselves, but would sell or lease blighted land for redevelopment under contract, stipulating conformity with a redevelopment plan. The law recognizes that the land reclamation job is a continuous one and one requiring separate attention by, and delegation of responsibility to, a duly appointed governmental body. It also makes it clear that private enterprise needs additional public encouragement and assistance in rebuilding deteriorated residential sections and run-down industrial and commercial blighted areas.

The new law is drafted to take advantage of features in the proposed federal redevelopment legislation, and also allows the redevelopment agencies to float their own bond issues.

Among the law's major features, which may be of interest in other states, are:

1. A statement of purpose and a definition of blighted areas which make it clear that the legislature is interested in a broad rather than a piecemeal approach to the subject of city rebuilding. Abandoned buildings in industrial areas, unimproved vacant land, and areas in which land is in a stagnant and unproductive condition can all be termed "blighted" under the Act.

2. Redevelopment is defined to include not only clearance, replanning, and redevelopment, but also "development" and rehabilitation of any improvements, as well as construction and provision for construction of residential, commercial, industrial, public or other structures and the grant or dedication of spaces such as streets, parks, playgrounds.

3. Two or more municipal governing bodies may create a regional redevelopment agency, a point of special importance where blighted and slum areas overlap municipal boundary lines.

4. The redevelopment agency may acquire property in any area designated by the governing body as necessary for carrying out the relocation of the residents, industry, and commerce displaced from a redevelopment area, and may also relocate or arrange for the relocation of residents of an area.

5. A number of important controls have been placed upon the powers of the agency, including:

a. Control of its budget by the governing body.

b. Planning-board review of all redevelopment plans.

c. Blighted areas must be established by ordinance and the governing body must hold hearings on the redevelopment plans of the agency and give approval to them by ordinance after planning-board review.

d. The governing body must review redevelopment plans and determine adequacy of relationship to definite local objectives, including appropriate land uses, density of population, improved traffic, public transportation, and utilities, and recreational and community facilities.

e. Governing body must also review provisions for temporary and permanent relocation of persons living in redevelopment areas, and their housing in decent, safe and sanitary dwelling units at rents within their means.

The Passaic-Bergen Community Planning Association, Inc., and the Montclair Planning Board took the leadership in the drafting and promotion of the new law.

Major features of the new Michigan Neighborhood Betterment Act will be reviewed in the August issue of THE AMERICAN CITY.

At Last! House Passes Housing Bill

AFTER years of having refused to take action on a national housing measure, although there has been repeated favorable action on it by the Senate, the House of Representatives on June 29 voted final approval of the National Housing Bill, by a vote of 228 to 185. The House bill is identical in all major details with the earlier Senate-approved version, S. 1070. As this issue of THE AMERICAN CITY went to press, certain minor differences still awaited reconciliation in Senate-House conference before ratification by the two bodies.

The bill establishes national housing objectives and policies and provides for:

1. Federal aid for slum clearance and community development and redevelopment. The Federal Government will put up $1,000,000,000 in loans and another $500,000,000 in grants to assist localities in doing the job over a five-year period. Through the grants, the Federal Government will make up two-thirds of the loss involved in connection with slum-clearance operations, and the local government will make up one-third either in cash or through provision of utilities, facilities, or municipal labor and equipment.

2. A low-rent housing program authorizing construction of 810,000 units in the next six years and committing the Federal Government to a $308,000,000 annual maximum subsidy for 40 years.

3. A comprehensive research program, including research into the technical, economic, and social problems in housing.

4. Farm housing aids, providing for loans and, in some cases, grants to improve and rehabilitate farm dwellings, the total federal commitment coming to $262,500,000.

5. A census of housing to be taken every 10 years starting in 1950.

Few measures will have as profound an effect on the future of American cities as the National Housing Bill. It is of the utmost importance that the local planning and construction under its provisions be wisely and carefully administered.

The established housing authorities, most of whose construction programs have been at a standstill since the war, are well qualified to resume their activities in rehousing low-income families.

It is the slum clearance, development, and redevelopment features of the bill which offer the greatest challenge in setting a pattern for comprehensive city rebuilding efforts. The bill leaves the problem of commercial and industrial redevelopment largely unsolved. However, it does offer definite opportunities to strengthen local planning programs and to establish procedures by which private funds will be encouraged to invest in the rebuilding of our cities according to desirable public standards.

Time to re-live a memory?

Somewhere in every man's memory, half-hid by the veil of time, there's a scene like this. If it wasn't the thrill of catching your first fish, it might have been the day you first swam alone, or the day you first pulled the trigger of a shot gun, with somebody else shouldering the stock to absorb the kick. Exactly what it was doesn't matter. It was an unforgettable moment in your life.

Summertime makes those memories live again. A man wants to go back to those carefree, sunny days when a quick tug on the line, the old swimming hole, or a brand new fielder's glove was the only thing that mattered. So, you take a vacation. And you realize again that those simple pleasures, with the workaday world behind you, are almost as good as ever.

When you take your vacation this year remember that Ryerson stocks are again large and complete—and that service is immediate. Just tell the boys who pinch-hit for you while you're away to call our nearest plant for every steel requirement.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI
CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

Municipal Finance Officers and Clerks Hold Successful Meetings

TWO important professional groups in the municipal field, the finance officers and the municipal clerks, held successful conferences in May with the Municipal Finance Officers Association meeting in Detroit and the newly named National Institute of Municipal Clerks meeting in Chicago.

Almost 650 delegates attended the MFOA conference, which featured discussions on new municipal income sources, property taxation, governmental accounting, improved administrative proceedures, public-employee retirement problems, and an excellent give-and-take session on constructive economy in government.

Specialized meetings were also devoted to such subjects as revenue-bond financing, purchasing procedures, airport accounting, off-street parking, and improved assessment procedures. Attention was focused on the importance of finance officers as key advisers on municipal administration by outgoing President Charles L. Beazley, Deputy Minister of Municipal Affairs, Province of Nova Scotia, in his address before the conference. Their responsibilities in taking a long-range view and of knowing the social and economic consequences of some of their policies was also emphasized.

Several of the conference speakers pointed to the finance officers' role in informing citizens on municipal problems and of keeping citizens finance-conscious through annual reports, the press, leaflets, etc.

Newly elected officers of the Association include Joseph F. Clark, City Treasurer of Wildwood, N. J., president; Lionel G. Ott, Commissioner of Public Finance, New Orleans, La., vice-president; and E. Lynn Gossley, City Auditor of Dallas, Texas, and L. Roberge, Director of Finance, Montreal, Canada, as executive board members.

Municipal Clerks' Conference

More than 150 persons registered for the Chicago meeting of the National Institute of Municipal Clerks, whose membership has increased in numbers from 17 to 252 during its short two years of existence.

Among those who addressed the group were Orin Nolting, Assistant Director, International City Managers' Association; Herbert Emmerich, Director, Public Administration Clearing House; Carl H. Chatters, Executive Director, American Municipal Association; Daniel F. Mulcahy, Supervisor of Elections, Secretary of State's Office, Boston, Mass.; A. L. Sargent, Executive Director, Illinois Municipal League, and T. R. Leith, Budget Director, State of Illinois. A forum session covering such topics as recording minutes, office procedure, licenses, mechanism in an office, vital statistics, conduct of elections, and codification and indexing also proved popular.

Substantially the same slate of officers and trustees was nominated and unanimously reelected to serve for another year so that there will be no major policy or organizational changes at a time when the Institute's affairs are being placed on a sound basis. Arthur J. Shinners, Town Clerk of Brookline, Mass., continues as president, and Philip P. Costello, City Clerk of Perth Amboy, N. J., continues as executive director.

At the conference, tribute was paid to Messrs. Shinners and Costello and to Harry S. Reichenstein, City Clerk of Newark, N. J., for their efforts in stimulating and promoting the growth of the organization.

Coordination of Municipal And School Budgets Urged

BETTER teamwork between city governments and their schools in providing health and recreation services and prevention of juvenile delinquency is urged by Thomas Harrison Reed, nationally known municipal consultant, in a new article on municipal government for the 1949 printing of the *Encyclopedia Americana.*

"The chief stumbling block is in the allocation of expenses," Dr. Reed says. "Until there is coordination between school and municipal budgets, there will be little coordination in social services.'

He cites the oft-forgotten fact that most American schools are controlled by state law and municipal authorities have very limited control. In only two cities are school and general municipal administration completely integrated — St. Paul, Minn., and Chattanooga, Tenn.

Dr. Reed, now counselor for the Connecticut Public Expenditure Council, began as executive secretary to Hiram Johnson when the latter was California's governor. He also served at California, Michigan and Harvard universities, the city and county governments of St. Louis, Mo., and Pittsburgh, Pa., and is a former director of the National Municipal League.

The American City Quiz

Answers to questions on Page 5

1. Atlanta began selling steam generated in its incinerator as far back as 1925. The city is paying the capitalized cost of its present incinerator out of revenue gained by selling the steam to the local power company.

2. Six men per hundred cubic yards is a good average figure unless unfavorable operating conditions are encountered, according to an American Public Works Association report.

3. The Minnesota Department of Highways feels that short panels 15 feet long are desirable. They provide a reduction in the width of the joint opening. This panel length also reduces pavement roughness, reduces intermediate cracks, eliminates the need of heavy reinforcing rods, is easier to keep sealed.

4. If everyone in the city uses garbage grinders, the garbage will probably add 30% oxygen demand to the sewage; it will probably add 50% more suspended solids. It should not cause difficulty in a properly designed sewer. The added flow contributed is so small that it is not a factor.

5. J. P. Burden, City Engineer, San Angelo, Texas, states that if digester gas has more than 5 grains per 100 cubic feet, it is corrosive and should be treated by passing it through an iron-shavings filter.

6. The unnecessary loss of groundwater by seepage action has been prevented in the Santa Ana region of California by injecting an emulsified asphalt barrier into the ground. This asphalt, a product of the Shell Development Co., Emeryville, Calif., will "break' even though not exposed to air. The process has been used successfully abroad and is being used in Santa Ana to save 0.66 acre-feet of water per day.

7. On a dollar value, fire losses today are at a new peak of $697,000,000. However, property values also are at a new high. In 1927, the dollar value of property destroyed was $473,000,000. If the 1947 figure were deflated to 1927 proportions, the cost would be $430,000,000, the National Board of Fire Underwriters reports.

8. Ten years seems to be the average in most cities, according to the International City Managers' Association.

9. The most important factor is to have containers large enough and convenient enough to receive all the refuse from the business being served without nuisance. In Richmond, Va., the business houses purchase 6- to 8-cubic-yard Dempster Dumpster units and the city owns the collection truck that picks up the units and delivers them to the point of disposal. This has reduced the cost of collection from $1 per cubic yard to 50 cents per cubic yard and has received the overwhelming approval of the business houses.

10. H. V. Petersen, Water Superintendent, Marshalltown, Iowa, states that if the cost of producing a ton of lime from the waste sludge is less than the cost of new lime plus the cost of sludge disposal, then a recalcining process may be considered profitable. The Marshalltown plant recalcines the lime sludge used in its softening process at a cost of $1 per ton.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

Seattle installs a one million gallon HORTON *Elevated Tank*

New radial-cone structure provides better water service in rapidly growing district

These two views show the 1,000,000-gal. Horton elevated tank Seattle recently installed in its water system to provide gravity water pressure for a rapidly growing section of the city. The capacity of an existing 250,000 gal. elevated tank (in the view at the left) had become inadequate to meet the growing water demand.

THE NEW elevated tank at Seattle is a 1,000,000-gal. Horton radial-cone bottom structure, 76 ft. to bottom, with a 25-ft. range-in-head. The radial-cone design provides a practical shape for large-capacity tanks with relatively low ranges-in-head, and makes it possible to eliminate the cost of pumping large amounts of water to unnecessary heights when the tank is filled.

Horton radial-cone bottom tanks are built in standard capacities from 500,000 to 2,500,000 gals. For tanks of 500,000 gals. or less, the Horton ellipsoidal bottom design is used. Ask our nearest office for full details on a tank of the size you need.

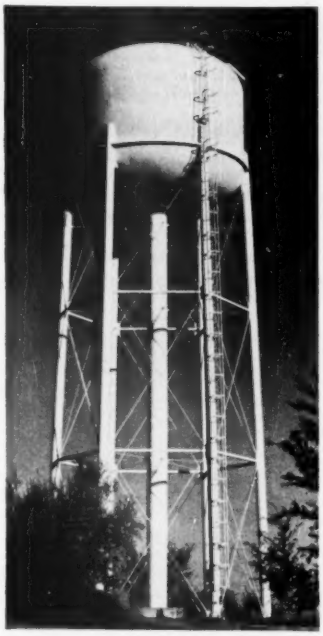
CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2114 Healey Bldg.	Detroit 26	1501 Lafayette Bldg.	Philadelphia 3	1616—1700 Walnut Street Bldg.
Birmingham 1	1502 North Fiftieth Street	Havana	402 Abreu Bldg.	Salt Lake City 1	1501 First Security Bank Bldg.
Boston 10	1002—201 Devonshire St.	Houston 2	2101 National Standard Bldg.	San Francisco 11	1233—22 Battery Street Bldg.
Chicago 4	2127 McCormick Bldg.	Los Angeles 14	1503 General Petroleum Bldg.	Seattle 1	1301 Henry Bldg.
Cleveland 15	2236 Guildhall Bldg.	New York 6	3308—165 Broadway Bldg.	Tulsa 3	1625 Hunt Bldg.

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

Council Bluffs Tank Uses Cathodic Protction



Council Bluffs' 200,000-gallon tank.

CATHODIC protection remains one of the methods used by Council Bluffs, Iowa (population 42,048, 1940 census), to protect its new 200,000-gallon elevated storage tank. The location for this particular tank became news three years ago, when the old tank failed. Suspected leakage that made the foundation unstable was offered as one reason for the collapse, which caused loss of life in a near-by residence.

The new tank, recently erected by the Chicago Bridge and Iron Co., uses the Electro Rust-Proofing cathodic protection system as one means of preventing leakage in the new structure.

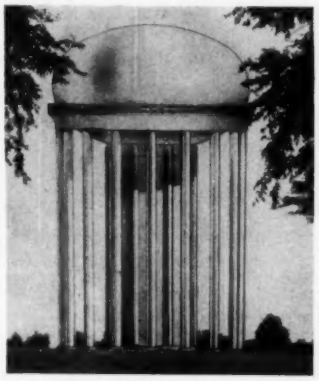
London Adopts Superchlorination

THE London, England, Metropolitan Water Board has adopted superchlorination as a means of producing a "free" residual in the treatment of water, and anticipates saving at least £40,000 annually in chemicals and a large reduction in capital expenditure on construction of works. The *Municipal Journal* of February 25, published in England, reports that since 1940 superchlorination has gradually supplanted the chloramine process at the Board's wells, and has now been extended to the filtration works. Samples have shown 99.92% freedom from the *coli* bacteria at well stations and 99.8% at filtration stations, and not one complaint of chlorinous taste has been reported.

The report states that superchlorination was investigated in the Board's laboratories as far back as 1918, but despite favorable results, the process was not successfully used for the filtered water. In 1926 the chloramine treatment was adopted. In 1932 and subsequently, Lt.-Col. E. F. W. Mackenzie, present Director of Water Examination, investigated the relative efficiencies of chlorine and chloramine. He concluded that free chlorine destroys bacteria many times more quickly than chloramine.

Precise control of the process has now been made possible by the development in the United States of tests that enable free chlorine to be distinguished from chloramine.

How It Will Look



An artist's sketch shows how the Greensboro, N. Car., water storage tank will look when completed. It is being fabricated and erected by the R. D. Cole Co., Newnan, Ga., and will hold 1.5 million gallons. The work is under the direction of W. M. Lybrook, Director of Public Service.

The Surface Supply That Failed

THE accompanying illustration shows why Water Supervisor Joseph Kruegel is glad that he doesn't have to depend on the old river intake to supply Kirkwood, Mo., with water. At this river stage there is a long hop between the elevation of the water and the intake port.

In 1947 Kirkwood (population 12,200) abandoned the use of the surface-water intake in favor of a Ranney collector (see THE AMERICAN CITY, October 1948, pages 108-109). Now Supervisor Kruegel reports that he has a reliable source of water much easier to handle and one that, after softening, provides a stable supply with a temperature range from 57 to 67 degrees.

PHOTO COURTESY OF KENNETH PEEK, KIRKWOOD, MO.

It is a long stretch from Kirkwood intake to the river's edge. Fortunately, a new supply is available.

DOES DOZENS OF JOBS

HANDY is the word for this "Caterpillar" Diesel D4 Tractor equipped with a "Caterpillar" No. 4S Bulldozer. It packs power aplenty (43 drawbar hp.) to handle heavy work, yet it's small enough to maneuver in cramped quarters. And its speed and economy make it a substantial money saver, whether you use it for sanitary fills, street maintenance work, park improvement, back-filling on sewer and water lines, snowplowing in winter, stockpiling or any one of dozens of other jobs.

That's why more and more municipalities are specifying "Caterpillar" equipment. It shows up well on the job—it shows up well on the ledger, and that means a happy setup all around. "Caterpillar" service is top-notch, too. There's a well-equipped "Caterpillar" dealer as close as your phone for action or information.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

. . . FASTER AND FOR LESS!

• The Hidalgo County Water Control and Improvement District No. 6 uses a "Caterpillar" Diesel D4 Tractor equipped with "Caterpillar" No. 4S hydraulic Bulldozer to fill in around an irrigation pump station near Mission, Texas. "We'll make a thousand uses of it," says Supt. F. J. Johnson. "It's much faster than any other 'dozer." Price of a standard "Caterpillar" D4 Tractor is $4425; No. 4S hydraulic Bulldozer, $1515 (*F.O.B. Peoria, prices subject to change without notice*).

CATERPILLAR

REG. U. S. PAT. OFF.

WHEN YOU THINK OF MUNICIPAL WORK, THINK OF THE BIG YELLOW MACHINES THAT DO THE JOBS FASTER AT LOWER COST.

DIESEL ENGINES
TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

Sewerage and Sewage Treatment

What About Garbage Grinders For Commercial Establishments?

By DR. N. O. GUNDERSON
Commissioner of Health
Rockford, Ill.

TODAY we have a clear knowledge of the household food-waste disposer. We have observed its operation with no apparent ill-effects to the house sewers, street sewers, and sewage-treatment plants of proper design and capacity. It now appears in keeping with good public policy to seriously consider using properly designed garbage grinders for commercial establishment use.

Records of city health departments across the country emphasize the importance of prompt food-waste disposal to hotels, restaurants, soda bars, luncheonettes, taverns, churches, schools, and industrial and lodge dining-room kitchens. The speedy, sanitary removal of food wastes from these premises eliminates unsightliness, rodents, insects, odors, and other nuisances.

Yet, because of municipal requirements, they must rely on the conventional garbage collection. Because *water*, the cheapest means of transporting food wastes, has not been generally applied in the solution of this important public-health problem, putrescible matter must be stored for a day, and sometimes two.

Why Not?

Below are the factors now being studied:

1. The kind, size, efficiency and length of time the various commercial garbage grinders need to be operated.
2. Effect, if any, on the house sewers.
3. Effect, if any, on the street sewers.
4. The size and design of the sewage-treatment works needed to dispose of commercial food waste.
5. City and sewage district ordinances that may prohibit the connection of commercial garbage grinders to the house sewer.

Based on present experience with domestic garbage grinders for home use, it may be asserted that commercial garbage grinder units present no problem. This assumes an adequate admixture of water with macerated food waste. It assumes no cross-connection difficulties, and no obstruction with grease-trap units.

As to their effect on the street sewers, if the sewers can handle ordinary sewage they can handle ground garbage. The effect on sewage-treatment works requires an understanding of the factors of capacity, digestion and final disposition according to accepted standards of sewage-treatment-plant operation. These are now fairly well established, as shown by those communities using municipal grinders for disposing of all putrescible refuse into trunk-line sewers adjacent to sewage-treatment works. The grinders present no problems that the sanitary engineer cannot meet.

Asks State Participation In Pollution Control

IN Elkins, W. Va. (population 7,345, 1940 census), the Planning Commission has asked that the State of West Virginia pay two-thirds and the city one-third of the cost of sewage-treatment-plant construction. Through the efforts of D. D. Brown, Planning Commission Chairman, West Virginia is presenting a bill to the legislature along these lines.

Concerted action of this type, the Commission urges, would allow states to correct the pollution first at the most badly polluted points.

State Provisions Relating to Water and Sewer Districts

State	Does existing legislation authorize formation of sanitary and water districts or authorities for		When did existing statute become effective?	Number of districts or authorities formed under it.	Can bonds be issued based on revenue?	
	Water supply	Sewerage			Water supply	Sewerage
Alabama	No	No		None	No	No
Arizona	Yes	Yes	1945	None	No	No
Arkansas	Yes	Yes	1927 and 1933	50+	Yes	Yes
California	Yes	Yes		84 water, 180 sewer	Yes	Yes
Colorado	Yes	Yes	March 1939	10±	Yes	Yes
Connecticut	No	Yes			Yes	Yes
Delaware	No	No				
Florida	No	No			No	No
Georgia	Yes	Yes	1937	12	Yes (1) Yes	Yes (1) Yes
Idaho	Yes	Yes	1947	None	No	No
Illinois	Yes	Yes			Yes	Yes
Indiana	Yes	Yes		Several	Yes	Yes
Iowa	Yes	Yes	Water 1924, 1937, sewerage 1945	3 water, 1 sewerage	No (2)	Yes (2)
Kansas	Yes (2)	Yes (2)		21+	Yes	No
Kentucky	Yes	Yes		8	Yes	Yes
Louisiana	Yes	Yes	1926	4	Yes	Yes
Maine	No	No		26 (3)	Yes	Yes
Maryland	No	No		5 (4)	No	No
Massachusetts	No (5)	No (5)			No	No
Michigan	Yes	Yes	1929	2 or more	Yes	Yes
Minnesota	No	No		One (6)	Yes	Yes
Mississippi	No	No			Yes	Yes
Missouri	Yes	Yes (7)	1933-35-41	13 water, 21 sewer	Yes	No
Montana	Yes	Yes	1947	None	Yes	Yes
Nebraska	Yes	Yes		1	Yes	Yes
Nevada	Yes	Yes	1928 (8)	3	No	No
New Hampshire	Yes	Yes	Water 1889, sewerage 1933	23	Yes	Yes
New Jersey	Yes	Yes	1899 (9)	20	No	Yes
New Mexico	Yes	Yes	1943	1	-No	Doubtful
New York	Yes	Yes		Many	No	No
North Carolina	Yes	Yes	1927	26	No	No
North Dakota	No	No				
Ohio	Yes	Yes	1914, 1917, 1919 (10)	167	No	No
Oklahoma	Yes	Yes	1931		Yes	Yes
Oregon	Yes	Yes	Water 1917, sewerage 1935	Water 85, sewerage 3	Yes	Yes
Pennsylvania	Yes	Yes	1935	64	Yes	Yes
Rhode Island	No	No				
South Carolina	Yes	Yes		Several	Yes	Yes
South Dakota	No	Yes	1947	None	Yes	Yes (11)
Tennessee	Yes	Yes	1937, 1943		Yes	Yes
Texas	Yes	Yes	1934	75-100	Yes	Yes
Utah	Yes	Yes	1947		Yes	Yes
Vermont	Yes	Yes	1945, 1947	None	Yes	Yes
Virginia	Yes	Yes	1930 amended	27 sewerage	Yes	Yes
Washington	Yes	Yes	Water 1929, sewerage 1941	146	Yes	Yes
West Virginia	No	Yes	1933	None	Yes	
Wyoming	No	No		None		
Wisconsin	Yes	Yes	1927	50	Yes	Yes

Notes: (1) By special act of legislature. (2) Separate laws, Special assessment for water. General obligation or revenue bonds for sewerage. Districts may not include portions of incorporated cities and may not cross county lines. (3) By special act of legislature. (4) Formed under special acts. (5) By special act of legislature. (6) By special act of legislature. (7) First class counties only. (8) Another act approved by 1947 legislature. Legality of this act is questioned. (9) With subsequent amendments to 1946. (10) Three separate acts. Revenue bond act in 1947. (11) No statute authorizing sewer rentals.

TAKEN FROM "SEWAGE WORKS FINANCING," PUBLISHED BY THE PORTLAND CEMENT ASSOCIATION, 33 W. GRAND AVE., CHICAGO 10, ILL.

Accessibility of PUBLIC FIRE ALARM BOXES Essential to Public Safety

These Newspaper Items Tell Why

THREE LIVES LOST

Aroused by Smoke, Neighbor Routs Residents from North High St. Apartment

Dialed Wrong Number

A man and two small children suffocated in a blaze which swept an apartment over the Dutch Cafe at 980½ N. High-st shortly after midnight.

It was discovered by Mr. and Mrs. George T. Collins, who lived across the hall.

Mr. Collins said he ran up and down the hallways of the second and third floors, routing 25 other residents. The burned apartment was on the third floor.

"I ran to a phone and tried to call the fire department," Mr. Collins told reporters. "But I was excited and apparently dialed the wrong number."

GAMEWELL
FIRE ALARM BOX

A fire tragedy averted

A woman set fire to the drapes in an eighth-floor room of the Ansley hotel Tuesday night, causing 14 pieces of fire-fighting apparatus to be rushed to the building, Radio Patrolmen R. E. Nickerson and Roy Fleming said Wednesday. Police charged her with being demented.

Considerable damage was done to the walls of the room, the officers said.

The officers praised the fire department for its quick response to the alarm. Three aerial ladders, six pump trucks, one light truck, a rescue squad, and three fire department superior officers answered the call.

The alarm was turned in by an unknown passer-by, who saw flames in the hotel room on the eighth floor and pulled a fire alarm box at the corner of Forsyth and Luckie sts.

—*From Atlanta Journal*

Time — the Vital Element

Time lost in sending alarms may result in loss of human life and great property values. The above extract from the Columbus, Ohio Citizen account of a fire in which 3 persons lost their lives is a striking instance.

Many similar instances of fires checked in their incipiency and serious losses averted by the prompt use of public fire alarm boxes occur daily but, the actual losses being trivial, such cases rarely receive publicity.

THE PUBLIC FIRE ALARM BOX —
REMAINS THE FIRST LINE OF
DEFENSE AGAINST FIRE

Statistics show that few, if any, cities have enough of them. We invite your inquiry.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., MONTREAL

Public Safety

Bicycle Taxation and The Safety Program

BICYCLE taxation and licensing as a part of the bicycle-safety program for the United States was suggested by Robert A. Campbell in THE AMERICAN CITY for January 1949.

Bicycle taxation will reduce bicycle accidents to the extent that the prohibitive rates will stop our youths from using their machines. Is this a just way to handle the problem? A fifty-cent license plate and a fifty-cent driver's license would be too expensive for many young people.

In England, where there are many more cyclists in proportion to the population than there are in the United States, bicycle taxes have not been found practicable or helpful in reducing the accident rate. According to the Cyclist Touring Club, "Sir William Harcourt, when Chancellor of the Exchequer, stated that he had no sympathy with proposals of taxing cycles, and all subsequent attempts to levy such an imposition have been unsuccessful."

ROLAND C. GEIST
Secretary of College Cycle Club
260 West 260th Street
New York, N. Y.

How Seattle Coped With Disaster

HOW DID city departments respond in the emergency following the earthquake that rocked Seattle and King County, Wash., at 11:56 a.m. on Wednesday, April 13, 1949?

Seattle Municipal News reports that citizens were impressed by the speed with which the police roped off unsafe buildings and that the work of other departments also merit commendation.

Water Department.—The earthquake caused 11 major breaks in city water mains. Within minutes, city reservoirs had lost 6,000,000 gallons of water. If the flow had not been promptly stopped, many areas would have been without water for fire protection.

Water-department flow records show that within 35 minutes after the quake all breaks had been isolated. By 4:30 in the afternoon, service was restored throughout the city.

Water Superintendent Chester Morris points out that many water mains weakened by the quake may not show damage for two or three years, when a "water hammer" may split them open.

Fire Department.—In the seven minutes following the temblor, 15 fire alarms were dispatched. A total of 31 alarms attributed to the earthquake were answered in all. Most of the early alarms were received in connection with broken automatic-sprinkler systems through automatic alarms.

Downtown streets were patroled with radio-equipped apparatus on the lookout for persons trapped in debris and weakened structures in danger of collapsing. Building managers in the downtown area were contacted by the radio patrols to offer the aid of the department and find extent of the damage.

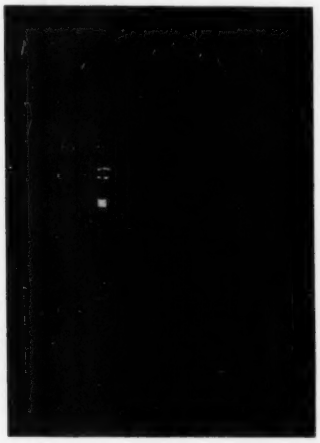
Building Department.—"The Superintendent of Buildings shall inspect, or cause to be inspected, every building or structure . . . which he has reason to believe is structurally unsafe or dangerous. . . ." (City ordinance.)

Needless to say, Building Superintendent Cain and his staff had their hands full, with hundreds of buildings in Seattle requiring inspection.

As part of the city's disaster plan, firms in the heavy-construction and building-demolition business were standing by following the quake for orders from the city building superintendent.

To Share State Service

THE towns of Old Lyme and East Lyme, Conn., have entered jointly into contract with the State Police Commission for the services of a resident state policeman and to share equally the expenses of such service. Canton and New Hartford, Conn., were the first two towns to take this step in accordance with a 1947 state law permitting the arrangement.



Fiery Hydrants

These three photos illustrate a civic and safety project, sponsored by the Lions Club of Salem, Ore. The two photos at upper right and left show how quickly apparatus headlights pick up fire hydrants equipped with Scotchlite strips. Another phase of the project is the marking of bicycles with Scotchlite. The daytime view of the hydrant at lower left shows Fire Chief W. P. Roble; L. J. Stewart, Lions Club president, and Stanley Smith, who handles the stripping.

Proven Performance On The Job!

T2 TRAXCAVATOR on road widening job in Walnut Creek, Cal. Smallest size in the TRAXCAVATOR family—powered by "Caterpillar" D2 tractor.

T4 TRAXCAVATOR on "Caterpillar" D4 tractor street grading in Orlando, Fla. Note amount of dirt bucket is pushing ahead and easily handles.

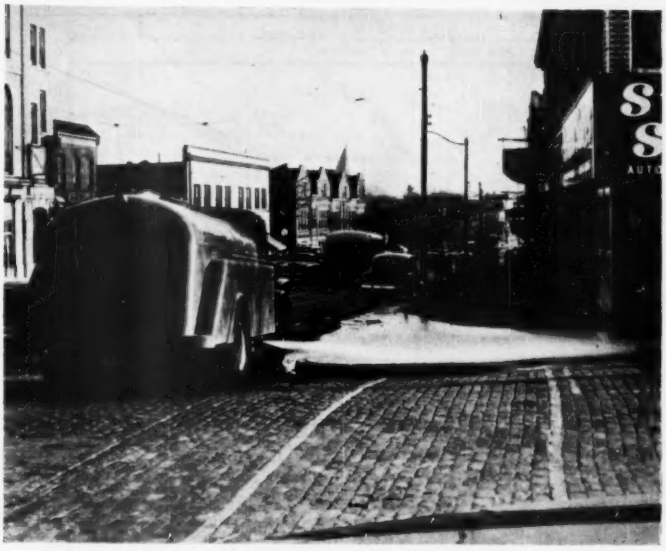
T6 TRAXCAVATOR loading "fill" material on Toronto, Ont., Can. project. The power in the "Caterpillar" D6 insures ample digging and loading push.

T7 TRAXCAVATOR helping to convert Madison, Wis., street into super highway. This biggest TRAXCAVATOR in the line is on a "Caterpillar" D7.

There's a correct size TRAXCAVATOR for every job and purpose. See your TRACKSON-"Caterpillar" dealer for detailed information or write to TRACKSON COMPANY, Dept. AC-79, Milwaukee 1, Wis.

TRAXCAVATOR
REG. U. S. PAT. OFF.
The Original Tractor Excavator

Street Cleaning and Refuse Disposal



Montclair's new flusher cleans both the sidewalks and the streets

Street and Sidewalk Flushing

MONTCLAIR, N. J., has instituted a new street-cleaning service made possible through the use of its new flusher. This provides that both the streets and the sidewalks are flushed clean in the downtown area three times a week, plus some machine sweeping. The new flusher is a 1,500-gallon truck with auxiliary pumping equipment made by the Brokol Manufacturing Co., Newark, N. J. The flusher is mounted on a White truck chassis.

Street cleaning in Montclair requires regular removal and disposal of paper by hand and machine sweeper. Last year this amounted to more than 6,000 cubic yards. The costs ran to $2.67 per cubic foot by machine and $3.67 by hand. The service is operated under the direction of F. M. Galloway, Town Engineer.

Indiana Legislation On Garbage Grinders

PRICE, the main stumbling block standing in the way of widespread use of kitchen garbage grinders, took a jolt in the State of Indiana recently by action of the state legislature. Senate Bill 147, Chapter No. 87, authorizes cities to issue revenue bonds to install kitchen garbage grinders if they have adequate sewage treatment facilities. It empowers city councils or town boards to establish rates, which are adequate to amortize bonds and maintenance and upkeep of the grinders. The law establishes procedures previous established in the Sewer Service Charge Act passed in 1932.

The cost of the individual grinder is relatively high for the average family. But this cost can be reduced by a figure estimated at 30 to 40% if the city buys them under a single contract. And the monthly costs are expected to be not excessive when amortization is handled by a municipal bond issue.

The funds so raised by charges to the individual users, under the Indiana law, must be used to finance the purchase and operation of the grinders. It cannot be spent to finance treatment plant additions or sewer construction.

Already one city, Jasper, Ind., is taking steps leading toward the adoption of such a practice. At present there are some 350,000 grinders in household use and 2,000 installed in hotels, restaurants and clubs.

Use of Refuse-Collection Fees Shows Increase

THE number of cities that finance all or a portion of their refuse-collection charges by a service fee has grown to 115, according to the International City Managers' Association.

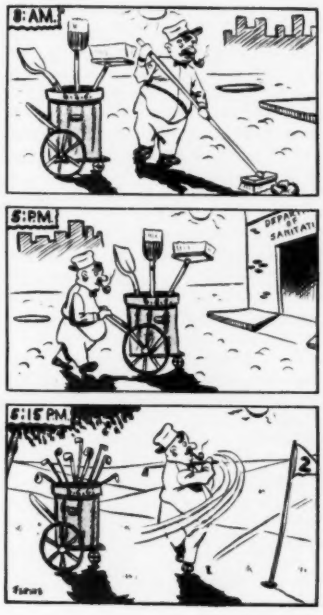
Average collection was $73,150, with revenues ranging from $506,724 in Oklahoma City to $1,700 in Park Ridge, Ill.

At least 125 municipalities make a charge to single-family dwellings for refuse collection. Atlanta is the largest. Its total collection revenue amounted to $63,500.

The average monthly bill for residence refuse collection in 101 reporting cities over 10,000 population was 81 cents. This was a 20-cent increase over charges for this service in 1945.

Fort Worth, Texas, collected $502,800 in refuse-collection fees in 1948. Tacoma, Wash., realized $491,600 from the charge; Tulsa, $377,600; Spokane, Wash., $362,600, and Berkeley, Calif., $354,100.

The monthly charge depends not only on the cost of collection but also on the degree that the service is self-supporting. Self-supporting services such as refuse collection are comparatively new. Prior to 1930, only 36 cities had adopted charges for this service.



Street Construction & Maintenance

Sheet Asphalt Uses Coarse Sand, No Rock

FINE graded sand for sheet-asphalt mix is scarce and expensive in Cincinnati, so this city's Division of Highway Maintenance developed a mix using coarse sand aggregate that works well.

The sand meets this general specification:

Screen	*% Passing*
⅜-inch	100
#4	95–100
#8	70–95
#16	45–80
#30	25–40
#50	10–30
#100	1–10

The mix selected, after much experimentation, followed these proportions:

Sand	85%
Dust	7%
Asphalt	8%

The asphalt is 70-80 penetration.

The Cincinnati experience discloses that the material cost in a ton of sheet asphalt produced, using local sand, is approximately $2.94. This compares with a cost of $4.55, using fine sand that had to be shipped to Cincinnati from the lake region. The redesigned mix is also reported to be easier to rake than the old conventional mix.

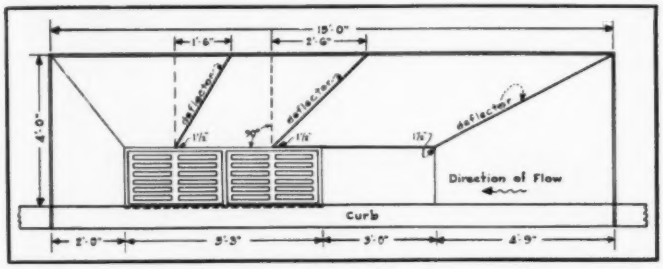
NO LOSS OF STABILITY NOTED

No loss of stability was noted in the new sheet mix. Extrusion tests revealed a higher stability than fine-sand mix, but this was attributed to the increased abrasive resistance presented by the coarser particles against the orifice of the testing ring.

Experimental patches are intact after six years under heavy traffic. The material to date has been used for resurfacing burned-off areas of defective sheet-asphalt pavement — approximately 1 inch in thickness; no experience was reported with material laid to usual depth for original sheet-asphalt construction.

The research was presented by Charles E. Brokaw, Superintendent, Division of Highway Maintenance, Cincinnati, in a short paper delivered at the American Road Builders' Association annual meeting held recently in Washington, D. C.

The work was conducted by the Highway Maintenance Division of the Department of Public Works. R. G. Sarvis is the Director of Public Works, and Wilbur R. Kellogg is the City Manager of Cincinnati.



Plan of a pavement inlet design used on streets with grades of more than 4%.

Deflectors Boost Capacity Of Street Inlets

THE capacity of street storm-sewer inlets can be increased and the inlet be made to function more efficiently if they are designed with deflectors in the catch-basin area. This was pointed out by H. H. Kranz, City Engineer of Cincinnati, Ohio, in a paper delivered before the American Road Builders' Association at its annual meeting held recently in Washington, D. C.

The research was conducted by Carl Siegrist, Assistant Engineer in the Sewer Section of the Engineering Division, under the direction of Arthur Buck, Senior Engineer, and A. B. Backherms, Principal Engineer. It showed that the capacity of all inlets was increased by lowering the inlet area; however, setting an inlet grating as much as 6 inches below the normal gutter grade is objectionable on counts not related to the efficiency of an inlet.

The tests showed that the most efficient type of grating was that with the bars parallel to the curb with no division rib. They also showed that the use of raised diagonal deflectors in the inlet area considerably increased the capacity of any of the inlets tested.

As a result of these tests, Cincinnati built a double gutter inlet with a 4-inch depresed inlet area with raised diagonal deflectors in the pavement on one of its streets. This street is paved with concrete, is 40 feet wide, has a crown of 5¾ inches and is on a grade of 12%. The gutter intercepted all surface runoff flowing in a gutter width of 4 feet without an appreciable overflow, and thus more than doubled the capacity of former setting of inlets.

On the basis of these tests, the city has revised its pavement detail drawings for storm-water inlets. The new standards call for the grating frame to be set parallel to the top of the curb and 2¼ or 3¼ inches below the grade in the gutter line, depending upon whether it be a flat or a valley-type grating. The surface of the pavement is then warped in smooth planes from the normal crown of the street at a line 4 feet from the curb to the inlet casting in a 12-foot length.

For streets having a slope of 4% or greater, the setting of the inlet casting is the same, but deflector ridges are molded in the concrete surface to direct the storm water run-off into the basin.

How the diagonal rib in the catch-basin apron deflects water into the gutter inlet. The grade seen here is 12%.

PERFECT FRONT-END ACCESSIBILITY

. . . for both driver and mechanic

THE DRIVER saves time and energy . . . thanks to curb-level step, wide doors, low cab floor with no obstructions to interfere with getting in and out either side, quickly and easily.

●

THE MECHANIC saves time, is able to do better work . . . thanks to complete accessibility of mechanical parts at "bench-height". Power-lift cab provides this in less than 30 seconds at the turn of a key.

THIS ENTIRELY NEW KIND OF TRUCK is a modern machine tool of transportation . . . engineered to do more work in less time. It saves time . . . "getting there" in present-day traffic, parking and unloading. It saves driver energy . . . helps to make him a better driver. It saves servicing and inspection time . . . permits the maintenance man to do better work because of "bench-height" accessibility to the engine and all front-end mechanical parts. Ask your local White Representative for all the time- and cost-saving facts as they apply to your business.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio, U. S. A.
THE WHITE MOTOR COMPANY OF CANADA LIMITED
Factory at Montreal

White
SUPER POWER 3000

FOR 50 YEARS THE GREATEST NAME IN TRUCKS

assure maximum compressor efficiency

Under All Conditions

Use Texaco air compressor oils and Texaco Lubrication Engineering know-how to help improve your compressor operation.

Whatever the type or size of your compressors — whatever your operating conditions — there is a specific Texaco air compressor oil that will assure full volume and pressure, longer compressor life, minimum cost for maintenance.

Texaco has a *complete* line of air compressor oils — straight mineral oils for regular service . . . rust-inhibiting oils where rust is a threat . . . heavy-duty oils for unusually severe service, or where carbon and gum are problems . . . compounded oils where water is present — oils designed to prevent wear and to keep valves clean, rings free, ports open and air lines clear *under all operating conditions.*

Let a Texaco Lubrication Engineer help you select the Texaco air compressor oils you need to assure best results. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write: The Texas Company, 135 East 42nd Street, New York 17, New York.

GUARD OPEN GEARS AGAINST WEAR — Protect your open gears with the recommended grade of *Texaco Crater X Fluid.* Although it is liquid when applied, it quickly forms a tough, lasting film that cushions shocks, reduces wear, prolongs gear life, assures quieter operation. Easily applied by brushing, spraying or pouring.

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Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers, or circle the identifying numbers on this coupon and mail to THE AMERICAN CITY MAGAZINE, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

7-49

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Name ..... **Position** .....

Address .....

Motor Sweepers Are Fast, Thorough

101 The Wayne motor sweeper has a large gutter broom with full-floating suspension to assure thorough coverage. Its non-clog elevator controlled for center loading to the hopper is designed to eliminate hopper-capacity wastage. Write for an illustrated booklet to the Wayne Mfg. Co., Dept. AC6, 1201 E. Lexington St., Pomona, Calif.

Automatic Parking Meter

102 The Husky operates automatically as soon as the parker inserts a coin. The Zemac housing gives protection against weather conditions and tampering, and the meter fits any conventional 2-inch standard. An illustrated folder is available from the Karpark Corp., Cincinnati 6, Ohio.

Steel Street Forms Cut Costs

103 The Blaw-Knox steel street forms for concrete curb, curb and gutter, integral curb, gutters, and sidewalks, is standardized to permit interchangeability so that not only is the work itself speeded up, but original and future costs reduced. Ask for Bulletin No. 2259 the Blaw-Knox Div. of Blaw Knox Co., Pittsburgh, Pa.

Mist Sprayer Mounts on Pick-Up Truck

104 The 700-pound L-40 Lawrence Aero-Mist sprayer has a vertical range of 65 feet and horizontal range of over 700 feet—and is light and compact enough to mount on a pick-up truck or trailer. At normal speed, the mechanism has an air output of 4,000 cubic feet per minute at a velocity of 125 miles per hour. Write for an illustrated folder to the Lawrence Aero-Mist Sprayer Co., Greenfield, Mass.

Dig and Load With One Machine

105 The Dempster Diggster is a small shovel that works on a hydraulic, simultaneous or independent crowd and hoist action that completely eliminates tractive effort with wheels in loading. It digs 15 inches below grade and can dig out a 15-foot bank. Digging and loading, it has a 15-foot turning radius and can be equipped with interchangeable buckets of 1, 1½, and 2 cubic yards. Folder No. 8154 tells the story; write Dempster Brothers, Inc., 869 Dempster Bldg., Knoxville 17, Tenn.

Paper and Trash Burner

106 Burn that trash on the spot! Don't handle it any oftener than necessary. The way to do this is to use the Westchester Utility and Burning Cart, built to allow one man to collect paper, leaves, brush, grass cuttings, drop them into the 40-inch high burning cart, and in a minute only ashes are left. Write to County Specialties, P. O. Box 625, Port Chester, N. Y., for literature describing it.

Carts to Replace Wheelbarrows

107 Garlinghouse Brothers, 2416 E. 16th St., Los Angeles 21, Calif., describes in a folder its line of Gar-Bro carts designed as material dump carts or standard concrete carts. A few of these carts will replace a multitude of wheelbarrows because of their greatly increased capacity.

Need Bottled Gas For Auxiliary Power?

108 In many cases propane gas can be used to advantage in supplying auxiliary power or heat to certain specialized municipal installations. If such a need arises in your community you can get help and advice from the Pacific Gas Corporation, 630 Fifth Ave., New York 20, N. Y.

You Can Adjust Time Limits On This Parking Meter

109 The Dual Automatic gearshift meter is designed to permit easy changing of parking-time limits from one to two hours and vice versa—just shift a gear lever and the meter movement is converted on the spot. Information may be obtained from The Dual Parking Meter Co., Canton, Ohio.

Emergency Chlorination

110 HTH is useful for dozens of daily sanitation jobs as well as for major emergencies where quick chlorination is required. Write for the 48-page annual, *Hypo-Chlorination of Water*, to the Mathieson Chemical Corp., 60 E. 42nd St., New York 17, N. Y.

Move Truck Shovel Fast From Job to Job

111 The Michigan truck shovel gets from job to job as fast as a truck—and under its own power. It goes through city traffic without trouble, and is not subject to the same restrictions that are placed on the conventional power shovel with caterpillar treads. Write for Bulletin 100, the Michigan Power Shovel Co., 373 Second St., Benton Harbor, Mich.

How to Stop Leaks

112 The latest folder released by the Stonhard Co., 1306 Spring Garden St., Philadelphia 23, Pa., tells how to stop leaks resulting from actual breaks or hair-crack water seepage—even against direct hydro-static pressure—with Stontite. This product is especially recommended for basements, foundations, reservoirs, swimming pools, and dams and tunnels.

Reduce Sewage Odors

113 Cloroben kills the foul smells frequently emanating from sewers, and checks sulfide generation. The result is an economy in rehabilitation costs of the sewers themselves—since sulfides cause deterioration—and a sewage delivered to the plant that is easier to treat. Write the Cloroben Corp., 15 Exchange Place, Jersey City 2, N. J.

High Grade Filter Sand and Gravel

114 The Northern Gravel Co., P. O. Box No. 307, Muscatine, Iowa, can ship you filter sand and gravel, in bulk or bag, that is produced from an inland pit to assure you of a product that is free from river contamination and foreign matter.

Leaves Can Cause Trouble On Streets, In Sewers

115 Slippery pavement and clogged sewers can be avoided if fall leaves are gathered. And the Good Roads Leaf Collector, operated by two men, not only inhales leaves via a flexible intake hose, but shreds them into small particles which form an excellent fertilizer (compost). Write the Good Roads Machinery Corp., Minerva, Ohio.

Keep Pool Water Pure

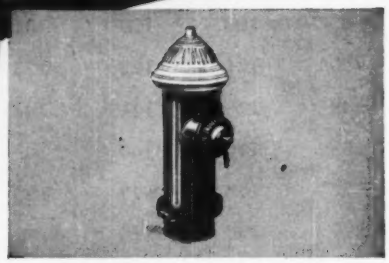
116 Bowser diatomite filtration systems guarantee clean, pure water in pools at all times—even portable pools. *The Modern Way* describes the equipment; write to Bowser, Inc., Water Filtration Div., 1396 Creighton Ave., Fort Wayne 2, Ind.

Pressure Filters— How and Where to Use Them

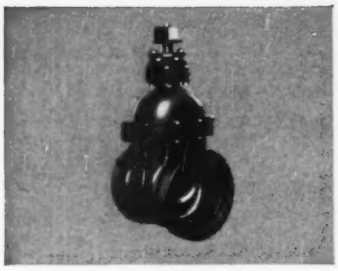
117 Refinite pressure sand filters, 48 by 60 inches, remove turbidity and provide the complete purifying action comparable to that produced by large filter plants. Equipped with 3-inch solo valves and piping, the filters will have a combined flow rate of about 115 gpm under normal load conditions. Write the Refinite Corp., Omaha, Nebr.

(Now turn to Page 23)

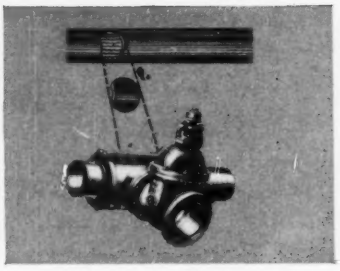
THE SMITH LAUREL LEAF



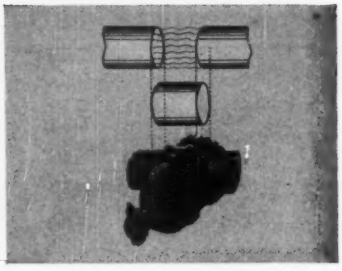
Fire Hydrants, **of the compression type, featuring Protectop collision protection, frost-proof tapered barrel, and positive action drain.**



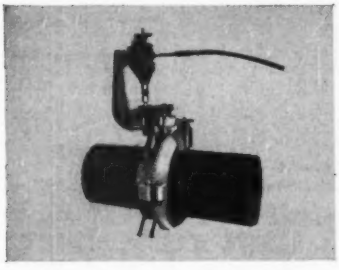
Gate Valves, **for low, medium or high pressure service. Manual, hydraulic cylinder, or motor operation.**



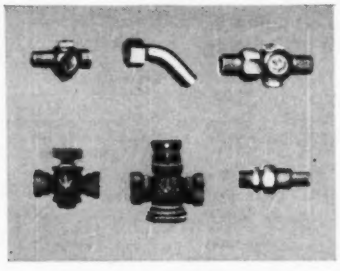
Tapping sleeves, **for making branch connections (in sizes 2" thru 42") under pressure in cast iron, steel, asbestos-cement or reinforced concrete pipe of any size.**



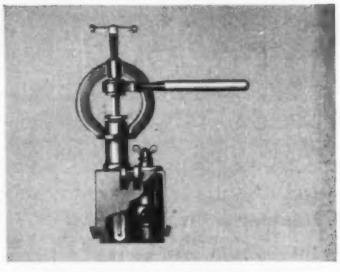
Inserting Valves, **for installing valves under pressure in cast iron, steel or asbestos-cement pipe in sizes 4" thru 48".**



Pipe Cutting Machines. **With the SMITH machine a true "lathe" cut can be made on cast iron, steel or asbestos-cement pipe in a minimum time.**



Water service brass goods: **corporation—curb cocks, couplings and other fittings for copper tube, lead and iron pipe services.**



Corporation Tapping Machines. **With the SMITH Tapping Machines corporation cocks can be installed under pressure. The machine is compact and easy to operate.**

**** Water works material of proven quality***

13

GATE VALVES
CHECK VALVES
FIRE HYDRANTS
INSERTING VALVES
TAPPING SLEEVES AND VALVES
WATER SERVICE BRASS GOODS

THE A. P. SMITH MFG. CO.
ESTABLISHED 1896
EAST ORANGE, NEW JERSEY

FLOOR STANDS
INDICATOR POSTS
TAPPING MACHINES
INSERTING MACHINES
PIPE CUTTING MACHINES
CORPORATION TAPPING MACHINES

Your Catalog Supply Service

The Coupon on Page 21 Will Get You a Quick Reply

Fast Patching With Fast Sprayer

118 The Tarco sprayer applies tars, asphalts, and emulsions, cold or heated, to provide a fast patch perfectly contoured. The machine may also be used to apply paint or weed killers, and it comes in direct drum types and tank types. Write the Tarrant Mfg. Co., East Ave., Saratoga Springs, N. Y.

This Filter Medium Gives Better Water Treatment

119 Anthrafilt has a long filter run, requires little wash water, has a low percentage of coating, caking, or balling with mud, lime, iron or manganese. Write for information to the Palmer Filter Equipment Co., 822 E. 8th St., Erie, Pa., representing the Anthracite Equipment Corp., Anthracite Inst. Bldg., Wilkes-Barre, Pa.

All-Wheel Drive, Steer Give Grader Power

120 The Austin-Western motor grader has all-wheel drive and all-wheel steer—adding maneuverability, power at the blade, and no dead front end from idling front wheels which consume power and decrease operating efficiency. Write for literature to the Austin-Western Co., Aurora, Ill.

2-Way Radio on Municipal Cars

121 Motorola's Instantaneous Deviation Control for FM 2-way radio eliminates interference from channel spill-over and eliminates reduction of maximum range or received energy level normally caused by over-modulation. It is available in kit form for all existing Motorola transmitters—mobile and base station. Write to Motorola, Inc., Communications Div., Dept. A. C., 4545 Augusta Blvd., Chicago 51, Ill.

Cut Down on Sweeper Costs

122 High-quality fibers make a big difference in the sweeper mileage obtained from sweeper broom cores. The Otto Gerdau Co., 82 Wall St., New York 5, N. Y., makes street-sweeper cores of African bass fibers, Indian Palmyra stalks, mountain hickory splints, steelwire China split bamboo.

Reduce Pipe-Laying Costs With a Pipe Pusher

123 The Giant Mfg. Co., Dept. P, Council Bluffs, Iowa, will send you a booklet describing its pipe pusher. The mechanism pushes pipe up to 15-inch diameter through the ground at the rate of 1 to 5 fpm—and avoids the heavy expense of trenching.

Four Models Meet All Lawn-Mowing Requirements

124 Th Eclipse Lawn Mower Co., 1804 Railroad St., Prophetstown, Ill., makes four styles of lawn mowers, powered by 4-cycle Briggs & Stratton gasoline engines, that can take care of any type of mowing situation, large or small. Write for data about the Rocket 20", the Parkhound 21", the Rolloway 25", and the Speedway 32" with sulky.

Compressors— The Power Behind Air Tools

125 The Smith Model 250 air compressor is powered by the Chrysler Industrial engine—three cylinders for power, three cylinders for compression. The capacity is 70 cubic feet at 80 pounds pressure. The throttle operates at about one-third open when operating at 150 pounds pressure. Write for data to Gordon Smith & Co., 425 College St., Bowling Green, Ky.

The Right Fire Hose Can Save Lives, Save Money

126 The cheapest is very often not the best —nor the cheapest in the long run. If your municipality is contemplating the purchase of fire hose, write for the facts about what is important in the choice of hose to the Bi-Lateral Fire Hose Co., 20 N. Wacker Dr., Chicago 6, Ill.

Keep Steel Tanks in Repair

127 The Dixie Tank & Bridge Co., P. O. Box 14, Memphis 1, Tenn., cleans, scales, paints, and inspects standpipes and steel elevated storage water tanks. The result is that after a Dixie treatment, you need have no fear of parts of your water system collapsing—a real danger when these large structures fall into disrepair.

Protect Municipal Properties With Fencing

128 The Pittsburgh Steel Co., 3266 Grant Bldg., Pittsburgh 30, Pa., will send you data about its line of chain-link fence—an emphatic deterrent to the curious, as well as to vandals.

Repair Concrete Structures Quickly, Inexpensively

129 The Gunite Concrete & Construction Co., 1301 Woodswether Rd., Kansas City 6, Mo., are specialists in cement-gun work—the process that rebuilds and repairs concrete structures to add years of life at little cost. Write for full information.

Waterproofing Admix For Concrete

130 When Hydropel is added to portland cement concrete, it resists expansion and contraction resulting from temperature changes; absorbs impact; resists solids, liquids, and gases, and is water resistant—forming an integral waterproofing admix with the concrete. In the west, write for literature to the Stancal Asphalt & Bitumuls Co., 200 Bush St., San Francisco 4, Calif., in the east, to the American Bitumuls Co., 200 Bush St., San Francisco 4, Calif.

Flusher Fights Dirt, Fights Fires

131 The Standard Steel TF tractor flusher is not only a dependable street flusher but an auxiliary fire-fighter. It can be hitched to any tractor for daily or emergency use, and can be powered by tractor take-off or independent pump motor. It gives 50 pounds pressure on each nozzle. Write for a catalog on the complete flusher line to the Standard Steel Works, North Kansas City, Mo.

All the Operations Of Sanitary Landfill

132 The Drott bullclam shovel attached to a tractor performs all the operations in sanitary landfill disposal of refuse; digs the trenches, moves the refuse, compacts, and covers. Write for a descriptive catalog and cost data on collection and sanitary fill equipment to the Drott Mfg. Corp., 3841 W. Wisconsin Ave., Milwaukee 8, Wis.

Traffic Control Devices— Meters, Flashers

133 The Duncan Meter Corp., 835 No. Wood St., Chicago 22, Ill., will send you an illustrated catalog describing its Miller parking meter, its Automaton meter (it winds itself), and its all-electric Duncan safety traffic-sign flashers.

New Design Valve Boxes Adjust Easily

134 The Amcast valve boxes manufactured by the American Casting Service, 1508 S. Kenneth Ave., Chicago 23, Ill., are designed for ease of adjustment and installation. Three styles are available: a regular 4-piece valve box, a 3-piece box with a regular top section, and a 3-piece box with a short top section to allow the operating nut to be just under the lid.

Easy Operation Of Pipe Line Locator

135 The Wilkinson line locator operates efficiently even if there are powerful broadcasting stations or high-tension lines in the vicinity. Light, compact, yet powerful enough to detect underground piping regardless of depth, the locator is carried in one hand by the operator. Write for literature to the Wilkinson Products Co., P. O. Box 1774, Wilshire-La Brea Station, Los Angeles 36, Calif.

Liquid Meters

136 The Worthington-Gamon Meter Co., a subsidiary of the Worthington Pump & Machinery Corp., 296 South St., Newark 5, N. J., will send you data on its complete range of liquid meters, available in all sizes and all types, and including the Watch Dog line.

Easy-to-Service Parking Meter Helps Traffic, Increases Revenue

137 The Rhodemaster Mark-Time parking meter is equipped with a Magic Link mechanism that assures operation during cold weather. That is one advantage of this meter. Others are a large, clearly visible face, simplicity of design for easy maintenance and repair, and an all-red dial when there is a violation. Write for data to M. H. Rhodes, Inc., 30 Bartholomew Ave., Hartford 6, Conn.

Rehabilitate Concrete Structures

138 Deteriorated bridges and other concrete structures need not be scrapped. Gunite can restore them to the point where they not only look good but also are capable of giving many added years of valuable service. Write for the 48-page *Gunite* bulletin to the Pressure Concrete Co., 193 Emmet St., Newark 5, N. J.

You Can Make Concrete Pipe

139 The Quinn Wire & Iron Works, 1623 12th St., Boone, Iowa, will send you information on its forms for making pipe locally by hand methods using either the wet or semi-dry process in sizes from 10 inches to 10 feet and larger, tongue and groove or bell-end.

Investigate Before You Dig For Groundwater

140 Ranney engineers can predetermine accurately whether a particular site will afford a permanent groundwater supply. If it will, the company installs its collector, designed to produce high-quality, low-temperature water at low initial cost and minimum operating costs. Write for information to the Ranney Method Water Supplies, Inc., Columbus 8, Ohio.

Rejuvenate Water Pipe With Cleaning, Centrilining

141 In one municipality 20 years was added to the life expectancy of 53-year-old water-main pipe as the result of reconditioning that involved a thorough cleaning and centrilining. Another result of the process was a marked increase in the volume of water that the main could carry. Write the National Water Main Cleaning Co., 50 Church St., New York 7, N. Y.

(Please Turn to Page 25)

MOST SIZES IN STOCK

SKINNER-SEAL Bell Joint Clamps—the universal repair for bell and spigot joint leaks—are again available for immediate delivery in most sizes.

Gasket is completely sealed and protected; at the bell face by a Monel Metal Seal Band; at the spigot by hard, vulcanized gasket tip, acting as a plug. Equalized pressure forces gasket into every crevice in the joint, sealing the leak at its source. Sturdy malleable iron Compression and Anchor Rings—shaped and pressure-tested before shipping. Large ¾" high-tensile steel bolts, cadmium plated. Speedy one-man installation cuts repair costs.

M. B. SKINNER CO., SOUTH BEND 21, INDIANA

SKINNER-SEAL BELL JOINT CLAMP

Stop—Check and Mail

Use the Coupon on Page 21

Asbestos-Cement Pipe Lays Quickly

142 Sometimes the speed with which pipe can be laid can make the difference between a successfully completed job and one accomplished only with difficulty. Because K&M Century asbestos-cement pipe is light in weight, easy to handle, and requires no machinery to lower into position, it can be laid quickly. Write for information about this pipe that does not rust or corrode to the Keasbey & Mattison Co., Ambler, Pa.

Death-Dealing Fog For Insects

143 The TIFA unit is a portable, self-powered applicator that discharges chemicals in a fog that spreads rapidly, adheres to all objects, and permeates through crevices. It may be effectively used in parks, beaches, and recreational areas, as well as for an all-over-town dousing. Write the Combustion Equipment Div. of Todd Shipyards Corp., 81-16 45th Ave., Elmhurst, Queens, N. Y.

Muscle-Toning Playgrounds Build Solid Citizens

144 Attracting children to playgrounds is no problem provided they have apparatus that appeals to them. Catalog Number 41 from the EverWear Mfg. Co., P. O. Box 958, Springfield 99, Ohio, describes the available pool equipment, basketball backstops, and playground contraptions.

Drinking Fountains

145 Cities install both indoor and outdoor drinking-fountain facilities, and two new booklets are available describing both types. Designs include the pedestal fountain, wall fountain, and electric water coolers. A price list is available with these illustrated booklets from The Halsey W. Taylor Co., 137 North St., N. W., Warren, Ohio.

Versatile Jobs From This Tractor

146 The Allis-Chalmers HD-5 tractor, providing 40.26 drawbar hp and 50.25 at the belt from a 2-cycle GM diesel, may be used to load and plow snow, load from pit, clear, pull scrapers, build sanitary fills, feed asphalt and crusher plants, grade, handle materials, and backfill. It can also be used for winch and hoist work, road and street maintenance, and flood control. Write Allis Chalmers, Milwaukee 1, Wis.

Building a Swimming Pool

147 If the time has come for your municipality to construct a modern "swimming hole," consult Wesley Bintz, 3011½ S. Washington Ave., Lansing 25, Mich. This consulting civil engineer specializes in swimming-pool designs, park layouts, and memorial and community buildings.

Water Meters

148 The Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y., will send you data on its American bronze-case and Niagara galvanized iron-case water meters. Water meters are important not only in assuring full payment of water delivered, but also as a check in discovering possible leaks that consume supplies.

Low-Priced Street Signs That Are Legible

149 The Cataphote Corp., Toledo, Ohio, will send you its catalog describing its legible, low-priced street-name signs. Standardization on easily read signs are not only helpful to motorists, but improves the appearance of your streets.

Utility Bodies For Your City Trucks

150 The Utility Bodies made by the American Coach & Body Co., 9503 Woodland Ave., Cleveland 4, Ohio, come in various styles: enclosed 4-man crew compartments; open crew compartments; tower lifts; revolving aerial ladder. Also made are specialized bodies, such as the Surveyor for carrying surveying crews and equipment.

Piling Jacketed With Gunite Before Driving Saves Money

151 Untreated piles can be encased with Gunite at a total cost of less than the purchase price of plain creosoted piles. And this process is of interest to officials of other than port municipalities. Guniting effectively rehabilitates all types of concrete structures. Write for Bulletin D2400 to the Cement Gun Co., Allentown, Pa.

Increase Pipe-Carrying Capacity By Lining Your Pipe

152 In one municipality the Centriline process of cleaning and lining with cement mortar restored the capacity of 40-year-old pipe to 12% higher than the original capacity—and this has been maintained for, to date, over 14 years. If pipeline is corroded and tuberculated and is delivering less water, write for data to the Centriline Corp., 140 Cedar St., New York 6, N. Y.

Sluice Gates

153 Chapman sluice gates are standardized for faster installation and easier maintenance. Since all parts are completely interchangeable, match-marking in the field is unnecessary. These gates, made by the Chapman Valve Mfg. Co., Indian Orchard, Mass., are operatable manually, by hydraulic cylinder, or by motor unit.

Elevated Tanks

154 Write to the R. D. Cole Mfg. Co., Newnan, Ga., for information about the design, fabrication, and erection of elevated tanks in capacities ranging from 5,000 to 2,000,000 gallons, with hemispherical, ellipsoidal, or conical bottoms.

Plastic Highway and Street Sign

155 Even when a Columbia non-corrosive plastic highway sign is bent almost double, the sign springs back to its original shape—and there is neither cracking, denting, nor color chipping of this resilient sign. Write to the Columbia Sign & Signal Corp., 10030 Lorain Ave., Cleveland, Ohio, for a catalog describing this sign with the color molded integrally throughout and the plastic base material guaranteed against rust or corrosion for the life of the installation.

One- and Two-Man Chain Saws

156 Henry Disston & Sons, Inc., 565 Tacony, Philadelphia 35, Pa., makes light-weight one- and two-man chain saws, and an extra-duty two-man saw that has a full 12 hp. The blades, with guide rails measuring from 18 inches to 7 feet, handle small or large felling jobs.

Cut Roots and Clean Sewers

157 Adjustable in 30 seconds to fit any sewer from 8 to 30 inches, the expanding root cutter and sewer cleaner removes roots and caked sediment from the wall, top, and sides of the sewer as well as the bottom. Write for a new catalog to the Expanding Sewer Machine Co., 108 East Walnut St., Nappanee, Ind.

(Please turn to Page 27)

Salvage Covers Cut Fire Losses

158 If the fire is put out, but the premises' interior is completely water-logged, it is like "operation successful; patient died." Shuredry Green-Bak salvage covers—light in weight, easy to handle, and resistant to water penetration and seepage—and assure the possibility of property salvage and more prompt rehabilitation for work or living. Write to the Fulton Bag & Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.

Protect Water Supplies By Overseeing Industrial Wastes

159 Treatment of industrial wastes to prevent harmful effects on public waters is increasingly recognized as a part of the municipal official's job. For data about General Chemical aluminum sulfate, Alum, in purifying wastes, coagulating and settling suspended matter, and reducing coloring matter, including many dyes, write the General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

Low Cost, No Maintenance On Aluminum Street Signs

160 The Lake Shore permanent aluminum street signs not only cost little and require no maintenance, but they perform efficiently the purpose of all street signs—they are visible at night as well as during the day. Write for Catalog No. 20-5 to the Lake Shore Markers Div., of the Lake Shore Pattern Works, 654 W. 19th St., Erie, Pa.

No Caulking On This Cast-Iron Jointing

161 Leadite, shipped in powder form, saves money in jointing cast-iron water mains. It is melted and poured, and neither bell-holes nor caulking is required. Write for data to the Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa.

Better Street Lighting From Refractors

162 The Spherolite Jr. offers the advantages of an enclosed luminaire with shielded light source. In addition, its narrow beam gives increased lighting of streets while shielding residences. Two Holophane refractors may be obtained: one gives a two-directional pattern of light, and the other a four-directional. Write Line Material Co., Milwaukee 1, Wis.

Speed Street Repairs With Tar and Asphalt Kettle

163 The Model No. 84-HD tar and asphalt kettle may be equipped with a motor or hand spray. It has a double heat-circulation system that utilizes the entire heat output of the burner, and the screened reservoir keeps the cold material from cooling off the already melted material. Write for data to Littleford Bros., Inc., 500 East Pearl St., Cincinnati 2, Ohio.

Fast Clean-Up, Snow Removal With Power Sweepers

164 The Little Giant power sweepers, both tow-type and mounted front-end, for trucks, jeeps, and tractors, operate from power take-off: wheel slippage cannot slow down the broom. One man operates the entire unit. A snow and bulldozer blade replaces the brush for snow-removal work. Also available is a sprinkler attachment that holds down the dust. Write Little Giant Products, Inc., 1585 N. Adams St., Peoria, Ill.

Announcing.. A COMPLETELY NEW LOW-COST MOTOR GRADER

ALLIS-CHALMERS
MODEL D
Weight: 8,500 lbs.
Brake H.P.: 34.7

Engineered from the ground up — to bring you **BIG** grader design and performance advantages

Big in Performance

- **TANDEM DRIVE** — maximum traction at all times, smoother riding.
- **PROPER WEIGHT DISTRIBUTION** — handles bigger loads . . . front-end stability.
- **"ROLL-AWAY" MOLDBOARD**—less power required to move more material at faster speeds.
- **HIGH THROAT CLEARANCE** — rolls larger loads without interference.
- **RIGHT WORKING SPEEDS** — four forward, 2.40 to 18.61 M.P.H.; reverse, 2.37 M.P.H.
- **TUBULAR FRAME AND DRAWBAR** — strong, shock absorbing, better visibility, more working clearance.

Big in Economy

- **SIMPLIFIED SERVICING** — operating adjustments easily reached, quickly made.
- **RUGGED POWER** — famous Allis-Chalmers gasoline tractor engine; easy to service, economical to operate — fuel tank holds day's supply.
- **ALL-WELD CONSTRUCTION** — strong, long life, stands up under tough service.

Big in Operating Ease

- **FULL VISIBILITY** — no obstructions, operator can see full blade while sitting or standing.
- **GREATER OPERATOR COMFORT** — roomy platform, comfortable seat, easy to handle.
- **HYDRAULIC BLADE LIFT** — fast, positive, trouble-free; only two control levers.
- **HANDY CONTROLS** — blade angle set from platform; throttle, shift lever, starter, conveniently located next to seat.

SPECIAL ATTACHMENTS

- Hydraulically Controlled Scarifier
- Hydraulic Loader
- All-View Cab
- Snowplow
- Various Other Accessories

Upper half of cab quickly lifted off or replaced. Scarifier location provides extra down pressure and allows controlled steering.

Watch for **D-DAY** *At Your Allis-Chalmers Dealer*

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Bulletins that Meet Your Needs

You are Invited to Use the Coupon on Page 21

Hydrant's Working Parts In One Unit

165 Because all the working parts of the Ludlow fire hydrant are in a single removal unit, the inspector or repairman needs only a wrench to check on the hydrant. The hydrants come in sizes from 2 to 72 inches. Write The Ludlow Valve Mfg. Co., Inc., Troy, N. Y.

More Net Revenue From Fewer Parking Meters

166 The Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla., will show you actual figures and the reasons behind its statement that 22% more net revenue was derived from 840 Park-O-Meters as compared with 854 meters of another type in the downtown area of one large city.

Hydrants and Valves

167 Catalog No. 34 from the M & H Valve and Fittings Co., Anniston, Ala., describes the company's hydrants and valves, hub ends, mechanical joint, flanged or screwed. Other products described are tapping sleeves, wall castings, floor stands, extension stems and cutting-in tees, gate-valve boxes, sludge shoes, and flange and flare fittings.

Neat Traffic-Marking Line

168 The basic feature of all Kelly-Creswell equipment, air curtains, make possible the application of clean-cut attractive lines without coming in contact with the surfaces—no smudges from smeared paint, and no brushes to wear out. Write for data to the Kelly-Creswell Co., Xenia, Ohio.

Bronze Tablets For Commemoration

169 Bronze tablets form a permanent tribute in the forms of signs, statues, cornerstones. For free samples, sketches, estimates, write for the catalog to the United States Bronze Sign Co., Inc., 570 Broadway, Dept. AC, New York 12, N. Y.

Eleven Uses for Chlorinator In the Sewage Plant

170 The W & T Chlorinators made by the Wallace & Tiernan Co., Inc., Newark 1, N. J., are used in sewage plants for disinfection, odor control, reduction of corrosion and concrete disintegration, BOD reduction, improvement of settling, conditioning of return supernatant liquid, prevention of sludge bulking, sludge conditioning, adjunct in chemical precipitation, trade-waste control, and effluent sterilization. And the average installation of the Siva, the streamlined 1949 model, represents less than 1% of the total plant cost.

Stop Water Hammer

171 The Williams-Hager flanged silent check valve stops water hammer—which can cause extensive damage. Write for a new technical bulletin to the Williams Gauge Co., 3013 Pennsylvania Ave., Pittsburgh 12, Pa.

Protection with Good Hydrants

172 The Mathews hydrant is designed with all working parts in a removable barrel that may be replaced in a few minutes, without excavation, if the hydrant is struck by a car. Water does not reach the thread to rust it or deposit sand, and the revolving nut is protected against rain and dust. Write the R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

The Importance of Well-Lit Recreation Fields

173 In one city of 55,000 people, the municipality boasts of five lighted recreational areas, and officials maintain that these parks have been instrumental in cutting juvenile delinquency and that the lighting has reduced vandalism in the parks. Write for Booklet GET-1284, *Floodlighting Plans for Sports and Recreation*, to the Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

Three Big Truck Features

174 The GMC 450 Series of motor trucks, made by the GMC Truck & Coach Div., General Motors Corp., Pontiac, Mich., is designed with emphasis on three major points: engine, cab, and frame and chasis. The engine has such features as full-pressure lubrication, Tocco-hardened crankshafts, and airplane-type main bearings. The cab is 8 inches wider and 7 inches longer than the pre-war model, has 22% greater vision, and has an automatic ventilation system, complete insulation, and soundproofing. The frame and chassis are built to handle gross vehicle weights up to 21,500 pounds and truck and trailer weights up to 37,000 pounds.

Self-Priming Centrifugal Pumps

175 By simply changing pump speeds, the Gorman-Rupp self-priming centrifugal pumps with V-belt drive adapts five pump sizes, 1½ to 6 inches, to an almost unlimited number of conditions, ranging up to 1,200 gpm with heads up to 110 feet. Ask for Bulletin 81P-11, The Gorman-Rupp Co., 343 N. Bowman St., Mansfield, Ohio..

Storage Batteries For Municipal Vehicles

176 The extra-heavy-duty storage batteries produced by the Hand Laboratory, Nyack, N. Y., for police radio and fire cars, sanitation trucks, snowplows, sweepers, and emergency trucks, have heavy, ultra-low antimony plate frames, heavy glass mats, acid and heat resisting microporous rubber separators, splash decks, and double-weight cell covers.

Motorcycles Speed Up Traffic Regulation

177 A motorcycle unit in the police force utilizes officers more effectively, since they can reach trouble spots more quickly and really enforce traffic regulations—there is nothing quite as deterring to violators as the knowledge that there is an officer who can catch up with traffic violators. Write for data to the Harley-Davidson Motor Co., Milwaukee 1, Wis.

Public Health Demands Kitchen Grinders

178 It is not just the little woman in the home who enjoys the elimination of garbage cans that have been replaced by kitchen-sink garbage grinders—public health demands the passing of the garbage can, a haven of vermin, odor, and disease. Write for information about the Hotpoint automatic electric Disposall, Hotpoint, Inc., 5600 W. Taylor St., Chicago 44, Ill.

Light Up Your Town

179 Joslyn street lighting—luminaires, brackets, and steel standards—are engineered for greatest lighting efficiency, constructed for durability, and designed to give your municipality an attractive appearance. Write for information to the Joslyn Mfg. and Supply Co., 20 North Wacker Drive, Chicago 6, Ill.

Three Products For Sewage, Water Treatment

180 The Solvay Sales Div., Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y., produces liquid chlorine, soda ash, and calcium chloride for the treatment of sewage wastes. Write for Bulletin No. 7, *Liquid Chlorine;* No. 8, *Alkalies and Chlorine in the Treatment of Municipal and Industrial Wastes*, and No. 11, *Water Analysis.*

Good Street Lighting Cuts Down Traffic Accidents

181 Statistics prove that good street lighting is the specific answer to the problem of reducing traffic accidents and even crime—sometimes as much as 40%. For more facts about modern street-lighting programs, write for *A Planned Program for Better Street Lighting*, The Street and Traffic Safety Lighting Bureau, 155 E. 44th St., New York 17, N. Y.

Seven Advantages To This Coagulant

182 Ferri-Floc effects coagulation over a wide pH range and color flocs may be formed in a very acid range; true hydrated ferric-oxide flocs may be formed at pH 9-10 or even higher for the removal of turbidity and manganese. The time required for the effect is short; filter runs are long; effluent may be produced that is low in both iron and aluminum; hydrogen sulphide is removed and taste and odor minimized. Ferri-Floc does not form mud balls. Write for a booklet to the Tennessee Corp., Grant Bldg., Atlanta, Ga.

Wrought Iron for Sewage Works

183 A. M. Byers Co., Pittsburgh, Pa., will send you an illustrated discussion of corrosion, experience data, and wrought-iron installations in sewage-treatment and disposal work. The results show the lasting qualities of the material.

New Chemical For Weed and Brush Control

184 2,4,5-T is a close cousin of the 2,4-D chemical, also killing by hormone action. But 2,4,5-T gives better control of poison oak, willows, and other woody perennials. The California Spray-Chemical Corp., Richmond, Calif., will send you data on this product, which mixes readily with water or oils and can be used in combinations with 2,4-D, where desirable, for extended coverage.

Many Services From One Sprayer

185 The Myers sprayers may be used for spraying trees and shrubbery; for weed, fly, and mosquito control; whitewashing; disinfecting, and other uses. Wheel and skid-type sprayers are available, as well as a 21-foot adjustable boom. Write the F. E. Myers & Bro. Co., Dept. N-194, Ashland, Ohio.

Free Analysis Of Your Water Supply

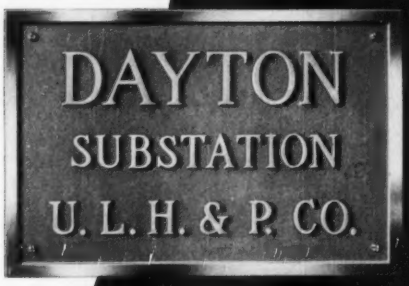
186 The Type E4 dry-chemical feeder made by Infilco, Inc., 325 W. 25th Place, Chicago 16, Ill., is designed for either constant-rate or automatic proportional-feed operation, and the feed rate is quickly adjustable.. Write for data and for the Water Analysis Sheet, which, filled in and returned with a sample of your city's water to Infilco, will analyze your supply. With the laboratory analysis, which costs nothing and places you under no obligation, the company offers an Infilco chemical calculator slide rule.

(More listed on Page 29)

MICHAELS BRONZE PLAQUES

For Every Purpose

Any size, any shape, any design to meet all your requirements.



Whatever you need in bronze plaques, it will pay you to contact Michaels. Plaques for public buildings, lobbies, offices, parks and playgrounds, for dedicating memorials, name plates for desks, for windows where payments are made, and any other purpose. Michaels plaques are made of virgin bronze with lettering, borders and ornamentation hand chased and burnished for contrast. Fast service. High quality work. Tell us what you need. We'll be glad to furnish sketches and quotations without cost or obligation. Michaels also manufactures a wide range of building materials in aluminum and stainless steel as well as MI-CO Parking Meters.

THE MICHAELS ART BRONZE CO., INC.

231 COURT STREET, COVINGTON, KY.

Manufacturers Since 1870 of Many Products in Bronze, Aluminum, and Other Metals

Get These Bulletins Now

Don't Forget the Coupon on Page 21 for Quick Service

Fueling a Diesel with Gas

187 If natural gas is readily available in your municipality, you can save on the operating costs of your diesels by fueling them with gas. Write for data to the Worthington Pump and Machinery Corp., Harrison, N. J.

Wind-Proof Torches

188 The No. 620 Leader, a self-righting torch with a capacity of three quarts, is made of 20-gauge steel with a leakproof mechanical seam. And the harder the wind blows, the better these torches burn. Write for data about this model and the other size and style offering to the Toledo Pressed Steel Co., 397 Phillips Ave., Toledo, Ohio.

Streamline Production With Duplicators

189 If any of the departments in your municipality requires the production of more copies than can be made by a typewriter with one typing, that department requires a duplicator to take it out of the horse-and-buggy-operation era. Write for data about duplicators and supplies to the Dayton Typewriter Co., 516 Wayne Ave., Dayton 10, Ohio. Ask for Bulletin 100.

Brass Goods For Water, Gas, Fire Service

190 Catalog J from the James Jones Co., 201 Leroy St., Los Angeles 12, Calif., is a 72-page cataloged description of the brass products manufactured by this company for water service, gas service, and fire protection.

New Pavement Surfacing

191 White surface heaters melt one inch of the old surface in five minutes. This can then be scraped away and a new top applied without damaging the base course. The mechanism can be towed on steel wheels, and moved by hand. Write for a catalog to the White Mfg. Co., Elkhart, Ind.

Low Power, Maintenance Costs On These Pumps

192 Morris centrifugal pumps are designed with low stresses for smooth operation, and correctly related impeller and casting designs keep power consumption down. Write for information to the Morris Machine Works, Baldwinsville, N. Y.

For Litter-Free Streets— Plenty of Waste Receptacles

193 Two steps can take care of providing litter-free streets and parks: plenty of waste-paper baskets, and an educational campaign. Your citizens will be amenable to depositing waste in receptacles if there are enough of them conveniently positioned. Write for a circular describing Norwich wire baskets and rubbish burners to the Norwich Wire Works, Inc., 49 Collins Court, Norwich, N. Y.

Overcome Taste, Odor Problems With Ozone

194 Water drawn from surface supplies is often odorous and unpalatable. One of the most economically efficient methods of eliminating these two problems is through the use of ozone. An ozone installation in Philadelphia treats about 36,000,000 gallons daily, with an ultimate capacity of 70 mgd. Write for *Philadelphia Finds the Answer* to the Welsbach Corp., Ozone Processes Div., 1500 Walnut St., Philadelphia 2, Pa.

Fire Apparatus

195 The Oren Roanoke Corp., Roanoke, Va., will send you data on its triple and quadruple combination fire apparatus on commercial or special fire chassis as well as its units combining high-pressure fog with standard pressure-volume service in one truck.

FM Communication For Municipal Departments

196 Philco FM communications systems, with the FM phase modulator and detector, assure clear, crisp speech-intelligibility with excellent reproduction even at weak-signal level. The mobile units can be mounted side by side or end to end, or stacked drawer fashion to take advantage of minimum space. Write for literature to the Industrial Div., Dept. BA5, Philco Corp., Philadelphia 34, Pa.

Elevated Steel Tanks

197 The Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa., will send you its catalog describing the various styles of elevated steel tanks for water storage. These tanks come in a variety of designs that remove the term "eye-sore" from these structures.

Chlorine For Normal or Standby Service

198 Pittchlor, containing 70% available chlorine, can be used as the sole agent in supplies up to 500,000 gallons daily, and as a valuable auxiliary in larger installations. It is granular, free-flowing, non-caking, and may be applied manually or through simple mechanical feeders. Write for literature to the Pittsburgh Plate Glass Co., Columbia Chemical Div., Fifth at Bellefield, Pittsburgh 13, Pa.

Automatic Valves For Tank and Reservoir

199 The Ross Valve Mfg. Co., Inc., P. O. Box 596, Troy, N. Y., makes altitude valves for tank and reservoir that have two sets of controls: automatic hydraulic and electric remote. The hydraulic pilot normally operates the valve, while the electric pilot is used in emergency.

Versatile, One-Man Machine For Street Repair, Construction

200 The Seaman Pulvi-Mixer handles all types of bituminous mix-in-place construction and all types of soils and binders, and can be used for mixing in fines during macadam-base construction. A rotor sweeps the sub-grade clean, lifts soil and throws it in every direction, breaking it into tiny particles for thorough blending with the binder from top to bottom. The pitch and curvature of the fines throws material from side to side to equalize the blend within the entire width of the mixer. A considerable portion of the material is carried forward over the rotor, frequently as far as 50 feet, to be continuously remixed, assuring uniformity of texture longitudinally. Write for complete details to the Seaman Motors, Inc., 292 North 25th St., Milwaukee, Wis.

Front-End Loader Does Four Jobs

201 The M-B front-end loader digs, dumps, scoops, and carries. A single lever controls digging pitch and raising, leveling, dumping, and shaking operations. Two bucket sizes are available and by removing the bucket either a back-filler blade or a crane hook can be added. Write for Bulletin 146, the Meili-Blumberg Corp., Box 110, New Holstein, Wis.

Smooth Inner Surface Increases Pipe Capacity

202 Koppers Bitumastic 70-B enamel gives pipe a glass-smooth, high-gloss interior surface that assures a flow capacity equally high after 10, 20, or more years' service because the Bitumastic forms a barrier against corrosion, rust ,and tuberculation inside the line and protects against corroding soil externally. Submit your requirements for recommendations and quotations to Koppers Co., Inc., Pittsburgh 19, Pa.

No Springs to Run Down In This Parking Meter

203 There is no possibility of losing revenue because of free parking resulting from rundown springs in the Mi-Co meter—there are no springs to run down. Other advantages of this meter are the few moving parts and simple mechanism. Write for data to Mi-Co Meters, 231 Court St., Covington, Ky.

Deep Embossing Makes More Readable Signs

204 Miro-Flex signs are deeply embossed on galvanized, bonderized steel, and finished in baked enamels. Signs are also available with glass or Lucite buttons, or beaded reflectorization. They are not only sturdy and smart-looking, but, most important, easily seen and read. Write for a catalog to Miro-Flex Co., Inc., 1824 East Second St., Wichita, Kans.

No Dismantling With Lawn-Mower Sharpener

205 The Modern lawn-mower sharpener sharpens all reel-type mowers, hand, power, or gang, in 10 to 20 minutes without dismantling and without the use of extra attachments. It may also be used to sharpen wood chisels, joiner knives, and planer blades. Ask for Bulletin No. 25B, Modern Mfg. Co., 160 N. Fair Oaks Ave., Pasadena 1, Calif.

Playground Equipment With a "New Look"

206 Described in the literature available from the Fun Equipment Co., Dewitt, Iowa, are such innovations as a multi-children swing-hobby horse, revolving swing, individual-seat merry-go-round, portable see-saws, and a tandem-style swing (two children swing on a pendulum facing each other).

This Sand Separator Protects Your Well System

207 You need not worry about sand being drawn from your well system and pumped into your water distribution system if you protect it with a McCurdy Sand and Water Separator. This type of equipment has a long and successful record in such applications at Houston, Texas, where the water demand is high. The separator is of the vertical-pressure type and operates by centrifugal action. Write the McCurdy Sand and Water Separator Co., 4875 Pacific Blvd., Vernon 11, Los Angeles, Calif.

Motor Scooter Solves Parking Meter Problem

208 In one city a Cushman Package-Kar motor scooter services 1,000 parking meters. The Package-Kar carries 10 extra replacement parking meters plus tools if your department operates by replacing out-of-order meters with operating meters and repairing the ailing meters at the central repair depot. Write for literature to the Cushman Motor Works, Inc., Lincoln, Nebr.

(Look on Page 30)

Thousands of these Service Signs

Guides To Briggs & Stratton Factory-Trained and Supervised Service

These are important to every manufacturer of powered equipment—every distributor, dealer, and user of Briggs & Stratton 4-cycle air-cooled gasoline engines. They are assurance of continued maximum performance and efficiency of all equipment powered by Briggs & Stratton.

These signs identify authorized and qualified Briggs & Stratton service organizations—each a part of an unequalled network of such outlets, available in all parts of the United States and Canada.

Each service organization has Briggs & Stratton factory-trained men, factory-approved tools and uses, factory-approved methods and only original factory parts.

This network of supervised service organizations is the largest of its kind in the world. Supervising, training, and constantly expanding this network and service is an important part of Briggs & Stratton's continuous effort to make its engines of greatest, constant value to their users.

Briggs & Stratton Corp., Milwaukee 1, Wis., U.S.A.

"Preferred" Air-Cooled Power

For You—Free

Use the Coupon on Page 21

Don't Play "Blind Man's Bluff" In Locating Buried Pipe

209 The Fisher M-Scope, made by the Fisher Research Laboratory, Inc., 1961 University Ave., Palo Alto, Calif., electronically locates pipe lines, T's and L's, bends, dead-ends, stubs, and services—it even measures the depth and center of the pieces located.

Even Cutting With "Air-Lift" Power Mover

210 The "Air-Lift" suction principle on the Pearce power mower lifts all grass to its full height to assure even cutting. The cutter is belt driven, and shock is automatically absorbed if the cutter hits a heavy object. The height of the cut is adjustable in one minute with the loosening of a single nut. The three models come in 31-, 25-, and 18-inch models. Write for literature to the Pearce Corp., 144 E. Highland Ave., Milwaukee 2, Wis.

What About Typewriters?

211 Every once in a while you read a piece wherein the writer brags that it is being written on his new electric typewriter. The latest was a New York Daily News editorial. What is so good about an electric typewriter? As an answer, Remington Rand Inc. has just published *Electric Typing vs. Manual Typing.* It is the latest in a series of informative booklets on the hows and whys of more efficient office output. They may be obtained without cost from the Utilization Department, Typewriter Division, Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.

Kill Weeds In One Spraying

212 One application will usually kill most weeds, and two do the job with the more resistant types. Even some woody plants will succumb to a treatment of the new 2, 4, 5-T, and Scott's weed controls are not harmful to pasture grasses and are non-poisonous to legumes. Write the Scott Farm Seed Co., Mechanicsburg, Ohio.

Fight Corrosion With Protective Coatings

213 *Perma-Skin Vinyl Corrosion Resistant Protective Coatings* is the title of a folder that will tell you how to combat atmospheric and chemical corrosion of metal, wood, stone, brick, and concrete structures and equipment. Write the Dennis Chemical Co., 2701 Papin St., St. Louis 3, Mo.

No Dirt In Diesel Engines

214 Higher efficiency and longer life without repair will be the result if diesel engines can operate on clean air from which dirt and dust has been removed. The American Air Filter Co., Inc., Louisville 8, Ky., will send you literature on its air filters, engine and compressor unit filters, Cycoil oil bath cleaners, Roto-Clones, and the Electro-Mist (an electronic precipitator for control of oil mist and smoke).

Spark Plugs and Lubrication

215 The entire subject of *Spark Plugs for Internal Combustion Engines* is detailed with illustrations in *Lubrication* for June, 1949, available without charge from The Texas Co., 135 E. 42nd St., New York 17, N. Y. Although the spark plug is a relatively small part of the engine, it can almost literally make or break the engine's performance record.

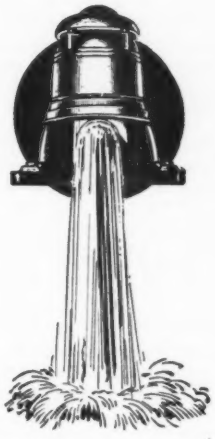
Steel is Available

216 Joseph T. Ryerson & Son, Inc., 2558 West 16th St., Chicago, Ill., can deliver carbon, alloy, and stainless steel in any size, shape and quantity. And a huge stock assures quick delivery.

(Please turn to Page 32)

SMALL CITIES
are among our best customers

With the largest and most completely equipped organization in the well water developing field, Layne has always provided excellent service for even the smallest cities. In no case have they had to pay a penalty for Layne's world-wide experience and outstanding success. As a matter of fact, Layne Well Water Systems actually cost less when the advantages of unquestionable high quality, proven efficiency and extra long life are considered.



Small cities receive the same professional engineering, skillful workmanship and high quality equipment which is always provided for the largest cities. The only difference is in the size and capacity of the units installed. Many hundreds of small cities and villages already have their own Layne Well Water Systems. All are highly pleased with their sound investments; the economy of operation cost and the complete dependability of the units at all times. The owning of a modern, high efficiency well water system has enabled many to obtain new industries and at the same time to enjoy better fire and health protection.

Small as well as large cities are invited to make inquiries and to obtain catalogs about Layne's complete service which includes surveys, water strata explorations, well drilling, pump installations etc. for a complete, thoroughly tested and in operation well water system. No obligation. Address LAYNE & BOWLER, INC., General Offices, Memphis 8, Tenn.

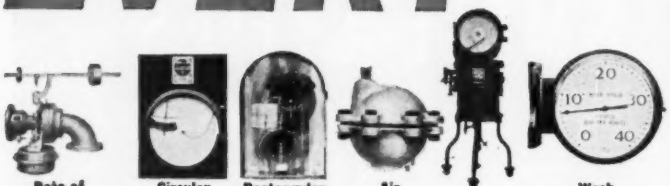
VERTICAL TURBINE PUMPS

Layne Vertical Turbine Pumps are available in sizes from 40 to 16,000 gallons of water per minute. These pumps, as a rule, can be installed in wells already drilled, thus gaining higher production without heavy expenditures. Write for pump catalog.

LAYNE
WELL WATER SYSTEMS

AFFILIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. ★ Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Pacific, Inc., Seattle, Wash. ★ Layne-Texas Co., Houston, Texas ★ Layne-Western Co., Kansas City ★ Layne Minnesota Co., Minneapolis, Minn. ★ International Water Corporation, Pittsburgh, Pa. ★ International Water Supply, Ltd., London, Ontario, Canada ★ Layne-Hispano Americana, S. A., Mexico, D. F.

EVERY



Rate of Flow Controllers | Circular Chart Type Meters | Rectangular Chart Type Meters | Air Release Valves | Pitot Recorders | Wash Water Gauges

ONE'S A

Filter Gauges | Orifice Plates | Fixed Manometers | Pitot Rods | Flow Nozzles | Air Inlet Valves

WINNER!

Portable Manometers | Insert Type Venturi Tubes | Venturi Tubes | Type "S" Parabolic Flume | Dry Chemical Feeder

- SPECIAL HYDRAULIC EQUIPMENT
- PROPORTIONAL CONTROL SYSTEMS
- SUMMATION DEVICES
- WK TAP TURBINE INSTALLATIONS
- CHEMICAL FEED CONTROLS
- PARSHALL FLUME AND WEIR METERS
- SAND EXPANSION GAUGES

Write for free bulletins to the
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SIMPLEX

VALVE AND METER COMPANY

Free Literature

Use the Coupon on Page 21

Many Jobs from Grader

217 The Adams grader may be used for all types of street maintenance work, grading, and earth-moving. It has eight overlapping forward speeds, a high-arch front axle for clearance, push-button starting from the cab, and a wide range of blade adjustments. Write the J. D. Adams Mfg. Co., Indianapolis, Ind.

Easy Installation of Pipe

218 Mono-Cast pipe, made by the American Cast Iron Pipe Co., Birmingham 2, Ala., combines minimum maintenance worries with ease of installation. This pipe can be used for conveying water, gas, oil, sewage, and other liquids under high or low pressures. In sizes from 3 to 48 inches, it may be obtained with or without tar coating, cement, or Enamelline lining.

Fog Fire Pumps and Guns

219 The Hardie Mfg. Co., Hudson, Mich., will send you a catalog and specification data on its high-pressure pumps and fog guns for fog fire trucks. These products are of special interest to municipalities converting obsolete fire trucks to fog fire fighters.

Know About These Corrosion-Proof Valve Boxes

220 Orangeburg valve boxes accommodate valves from 4 to 10 inches and, composed of about 25% by weight of tough fibrous structure and 75% of hard coal tar pitch thoroughly saturated under vacuum, is non-metallic and non-corrodible. The valve boxes may be used in trench depths of 3 to 6 feet, depending on the valve size, and the shaft can be sawed with a coarse-tooth woodworking saw or cut with a chisel. Write Valvco Ltd., 57 William St., New York 5, N. Y.

No Backwater From Inadequate Sewer Carry-Off

221 The booklet, *Backwater Sewer Valves*, tells you how to protect property, equipment, and supplies against backwater from excessive rain, flood conditions, and inadequate sewer carry-off by means of the Josam side-swing backwater sewer valve. Write the Josam Mfg. Co., Dept. SE-6, Josam Bldg., 1302 Ontario St., Cleveland 13, Ohio.

V-Belt Drive For Mixer Drum Rotation

222 The V-belts that almost completely surround the drum of the 3½-S Non-Tilt Dandie concrete mixer give the drum enormous gripping area; the elimination of customary gears or sprocket and chain reduces maintenance costs to a minimum while providing more silent and smooth machine operation. Write for the descriptive folder to the Kwik-Mix Co., Port Washington, Wis.

Fencing Protects Property

223 The Atlas Fence Co., Richmond and Pickwick Sts., Philadelphia 34, Pa., will send you descriptive literature on its fencing, available in various styles with and without barbed wire. Also discussed are slide gates and swing gates.

Caterpillar's Equipment

224 *Caterpillar Products* is the title of a 32-page brochure that illustrates the line of machines produced by the Caterpillar Tractor Co., Peoria, Ill. Among the pieces described are diesel tractors, scrapers, bulldozers with straight and angling blades, diesel motor graders, cable controls, rippers, and diesel engines.

(Please turn to page 34)

THE OPEN CITY DUMP IS CLOSED

Replaced by Parks and Playgrounds

...Made Possible by The Drott Bullclam Shovel Method of Sanitary Fill

No tears will be shed over the passing of the open city dump — an eyesore of the community, an incubator of disease-carrying insects, rats, maggots, reptiles; a source of fires, of annoying stench and smoke. Soon this public menace will be gone for good.

In its place are new, clean Sanitary Fills built with Drott Bullclam Shovels. Refuse is dumped into trenches, compacted tightly and kept covered daily with good earth. Converted from wastelands, these fills not only serve as depositories for refuse, but provide future sites for landscaped parks and playgrounds. More healthful, happier communities result!

It will pay you who are anxious to be rid of disease-harboring, annoying open dumps, to investigate the Drott Bullclam Shovel Method of Sanitary Fill. Let us give you all the facts!

Cost data from cities reveal that the Drott Bullclam Shovel Method Of Sanitary Fill is by far the most economical. This one machine handles all operations. Digs the trenches, compacts and covers the refuse, maintains the site. Is also used for other construction and maintenance.

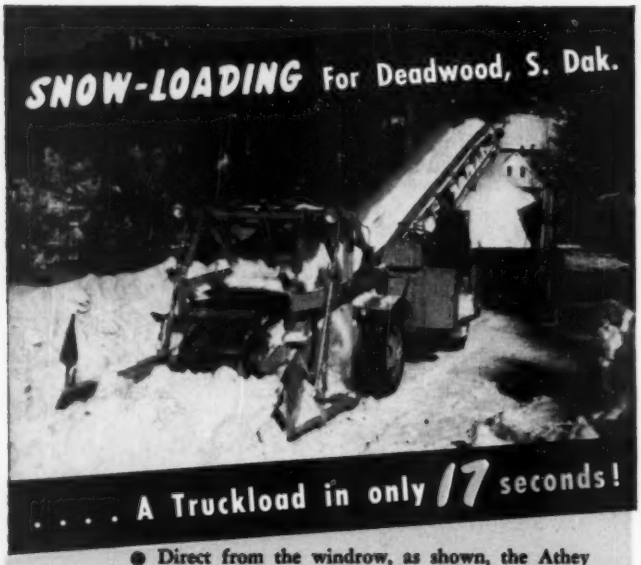
Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.

DROTT UNIVERSAL EQUIPMENT

FREE

On request; descriptive catalog and list of cities using Drott method. Also cost data on collection and sanitary fill equipment.

DROTT MANUFACTURING CORP.
3041 W. WISCONSIN AVE. MILWAUKEE 8, WISCONSIN



● Direct from the windrow, as shown, the Athey Force-Feed Loader cascades snow into trucks — heaping full in an average of only 17 seconds!

That's how Deadwood, South Dakota, helped solve its snow-removal problem — deep in blizzard-buried February of 1949. It's the way cities of all sizes, wherever snow hampers traffic, can save important days and dollars — and promptly get back on their wheels after snowstorms.

For this important duty, a cleated-type snow-belt is used on the Athey Force-Feed Loader. The exclusive "Full-Floating" feeder of the Athey Force-Feed Loader promotes this machine's snow-loading efficiency. It enables loading the snow, wet or dry — loose or frozen — clean or dirty. *As much as 20 cubic yards per minute.* And from windrows up to 3 feet high. Athey Force-Feed Loaders are useful *the year 'round!*

See your Athey-Caterpillar Dealer for more information — or mail the coupon, *today.*

Athey

ATHEY PRODUCTS CORPORATION
CHICAGO 38, ILLINOIS

Athey APCOR Products

ATHEY PRODUCTS CORPORATION
5631 West 65th St., Chicago 38, Ill.

Gentlemen:
Please send further information on modern Snow Removal with Athey Force-Feed Loaders.
NAME .....
CITY .....
STATE .....
What snow-loading method does your city now use? .....

For You—Free

Use the Coupon on Page 21

Automatic Valves For Water Supply

225 Few pieces of equipment have taken the headaches out of water distribution as have reliable automatic valves and remote controls. Consequently officials responsible for water supply will welcome the new Catalog No. 49 published by the Cla-Val Co., P. O. Box 949, Alhambra, Calif. The catalog lists altitude valves, float valves, manual controls, pressure reducing valves, pressure relief valves, check valves, and similar equipment.

Swivel-Joint Outlets Solve Special Water Needs

226 When you need water, applied under pressure, and you need some flexibility in its use, as is often the case in water and street departments, then you turn to the Chiksan ball-bearing swivel joints for the water outlet. The swivel joints have been manufactured for pressures as high as 12,000 pounds per square inch and also for special high temperature applications. Write to the Chiksan Co., Trea, Calif., and ask for catalogs.

Hand Book Of Building Maintenance

227 The booklet offered by the Flexrock Co., Filbert & Cuthbert Sts., West of 36th, Philadelphia 4, Pa., describes such phases of building maintenance as floor materials, seals, and finishes; waterproofing and weatherproofing with leak stoppers, coatings, and dampproofing, caulking, plaster coating, and roofing products. Included is a description of exactly what procedure to use in these processes.

Control Microscopic Organisms In Water Supply

228 *The Use of Copper Sulphate in Control of Microscopic Organisms* may be obtained from the Phelps Dodge Refining Corp., 40 Wall St., New York, N. Y. This 44-page booklet covers the determining factor in the growth of microscopic organisms, a description of the various types and—most important of all—just what to do about it.

You Can See These Traffic Signs

229 Scotchlite traffic signs are legible day and night, and durable. The wide-angle reflective sheeting is coated with millions of uniform glass beads permanently and mechanically locked to the surface so that the signs retain original brightness throughout its life. Write for a catalog to the Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

Jail Equipment

230 Fries & Son Steel Construction and Engineering Co., Second and Madison Aves., Covington, Ky., will send you literature describing its prison cells equipped with automatic sliding door and hand pull, locking and operating devices (manual, hydraulic, or selective electrical) prison plumbing fixtures, bar gratings, and low-voltage electrified alarm-giving window guards and gratings which go off when sawed or drilled into.

How Some Tough Jobs Were Accomplished

231 *It Can Be Done* is the title of a brochure from Parker & Hill, Smith Tower, Seattle 4, Wash., that gives the case histories of individual water and sewer systems, water storage, sewage treatment plants, platting, and street improvement projects. A brief summary with each case history highlights costs, population served, quantities, financing, and charges to users.

Here's Why McCULLOCH Saws *start fast... and cut fast*

Conventional magneto, with coil inside flywheel, gives less spark at low speeds.

McCulloch magneto gives hotter spark at low speed. Magnetic lines of force are broken faster, because of higher rim speed at a given cranking rpm.

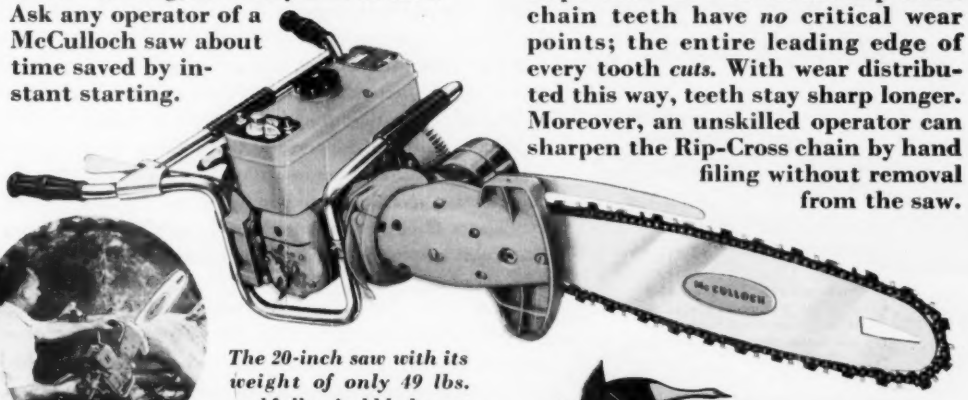
THESE FEATURES SAVE TIME IN TREE WORK

they start fast

The sketch shows how the McCulloch magneto differs from the conventional type. At any given cranking speed, magnetic lines of force are broken faster, giving a hotter spark at low speeds. The hotter spark means faster starting, in theory and in fact. Ask any operator of a McCulloch saw about time saved by instant starting.

they cut fast

The special curved teeth of the McCulloch Rip-Cross chain, driven by 5 honest hp, actually scoop out the wood—with or against the grain or at any angle, in any kind of hard or soft wood. And here's another important time-saver: the Rip-Cross chain teeth have *no* critical wear points; the entire leading edge of every tooth *cuts*. With wear distributed this way, teeth stay sharp longer. Moreover, an unskilled operator can sharpen the Rip-Cross chain by hand filing without removal from the saw.



The 20-inch saw with its weight of only 49 lbs. and full-swivel blade, can be easily operated in any position by one man.

6 MODELS AVAILABLE—ALL INTERCHANGEABLE

20-inch Chain Saw...$385.00

50-inch Chain Saw...$415.00

30-inch Chain Saw...$395.00

60-inch Chain Saw...$425.00

40-inch Chain Saw...$405.00

20-inch Bow Saw $425.00

All prices f. o. b. Los Angeles

McCULLOCH MOTORS Corporation

6101 W. Century Blvd., Los Angeles 45, Calif. Dept. MM

SEND FOR FULL INFORMATION

McCULLOCH MOTORS CORPORATION
6101 W. Century Blvd., Los Angeles 45, Calif., Dept. MM

Please send complete information on the 5-hp McCulloch chain saw and name of nearest dealer.

Name_____

Firm name_____ Type of work_____

Address_____ City_____ State_____

FOR OVERHEAD SERVICE LINES

THAT GO UP FAST

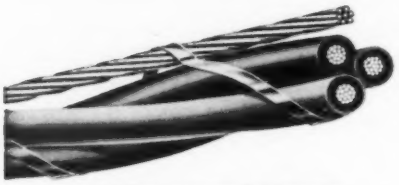
PREVENT LINE TROUBLE

KEEP COSTS DOWN

HAZARD SELF-SUPPORTING AERIAL CABLE

***install this pre-assembled cable, messenger and binder* ALL IN ONE OPERATION**

• Multi-conductor Self-Supporting Aerial Cable for signal and control circuits. Varied insulation colors provide quick circuit identification.



• Three-conductor Self-Supporting Aerial Cable. Hazaprene protective jacket on each conductor makes splicing and terminating simple and fast.

ALUMINUM CONDUCTORS

• Hazard Self-Supporting Aerial Cable available with Aluminum Conductors. Ask your Hazard representative or write us for the facts about lightweight conductors for overhead service.

Where overhead service with insulated cable is indicated, Hazard offers you this simple, self-supporting cable construction that makes installation quick, easy and economical . . . that provides ample protection against tree branches and rough weather . . . that assures lasting, trouble-free, low-cost circuits.

With Hazard Self-Supporting Aerial Cable, specially compounded Submarine rubber insulation provides long-lived, moisture-resisting, electrical protection for the Hazaloy coated copper conductors. Over this insulation goes a tough Hazaprene jacket that's well known for its unusual resistance to sun, cold, moisture, abrasion.

Bound to the cable by a spirally wound metallic tape, a strong Copperweld messenger gives full support between points of suspension. This simple, but effective *all-in-one construction* (cable, messenger, binder) of Hazard Self-Supporting Aerial Cable provides the ideal answer to the problems of installing and maintaining overhead circuits. For more information, ask your Hazard representative or write Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pennsylvania.

6403

HAZARD

insulated wires and cables for every electrical use

★★★★ Barber-Greene ★★★★
B-G COST SAVING BULLETIN No. 4901

63,000 TONS UNLOADED IN 210 DAYS FOR READY-MIX PLANT

"Not an Hour or a Penny for Repairs"

Griffith, Ind.—The Griffith Ready-Mix Company have speeded up and greatly simplified hopper-car unloading operations at their plant here—as shown by their record of unloading over 1,000 cars in 210 days. Their B-G Belt Car Unloader and Portable Conveyor are clearing 5 to 6 cars a day on a 6-day week basis.

Griffith's unloading setup is simple, low in cost and effective. They keep about 60 cars of aggregate on hand, and their 358 Unloader is easily placed over the rails (it works equally well in pits), and, with the 363 Portable Conveyor unloads to a temporary stock pile at a 3-ton-per-minute clip.

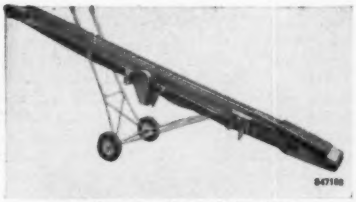
Previously, a crane was used for unloading and stockpiling operations. Now it is free for a variety of other tasks around the yard.

Griffith's operators have found that the 358 won't jam up and will start with a full load on the belt. The 363 Conveyor is equally sturdy, capable of operating 24 hours a day—day in and day out—on a 3-ton-per-minute basis.

The Model 358 Car Unloader and 363 Conveyor combine higher standards of performance, higher capacities and more ability to handle all materials than heretofore available in any other loader-conveyor combination.

One Man Unloads 50-Ton Car in Hour to Radial Storage

Richmond, Va.—One-man unloading to radial storage bins has meant real economy to Tiller Coal Company, Inc. The B-G Coal Unloader and Radial Conveyor provide the flexibility required to unload directly into bins or trucks as the occasion demands. "We have found we can exceed everything Barber-Greene said the setup would do," said L. W. Gress, president of the concern.



Ship Carries Own Unloaders

Mobile, Ala. **The good ship *Rosario* operated by the Suwanee Steamship Company carries two B-G 363 Portable Conveyors to facilitate loading and unloading cargoes of bulk materials such as sulphur, gypsum, etc. Low initial cost and high capacity of the B-G units account for their seafaring role.**

EFFICIENT CONVEYOR PLAN SAVES 90% OF EQUIPMENT COSTS ON $2½ MILLION BRIDGE JOB

Jacksonville, Fla.—The George D. Auchter Company of this city credits much of the savings that made possible its being the low bidder on a 2½ million dollar bridge contract to its new B-G 363 Conveyor and 358 Unloader.

This job, 30 miles from the city, offered no railroad facilities so it was necessary to barge materials to the site. Loading the barges from hopper cars was a real problem. First consideration was given to equipment that would cost over ten times that of the B-G unloading team until they learned how easily the 358 Unloader and 363 Conveyor could do the job.

All Materials Handled by B-G Team

The result was that the 358 and 363 unloaded all the materials from cars on the Auchter Company's spur at the riverside. Material was sent directly into the barges through a chute at the discharge end of the 363 Conveyor. This, the company reports, was a high volume, low cost and entirely successful operation which was largely responsible for its being able to secure the contract.

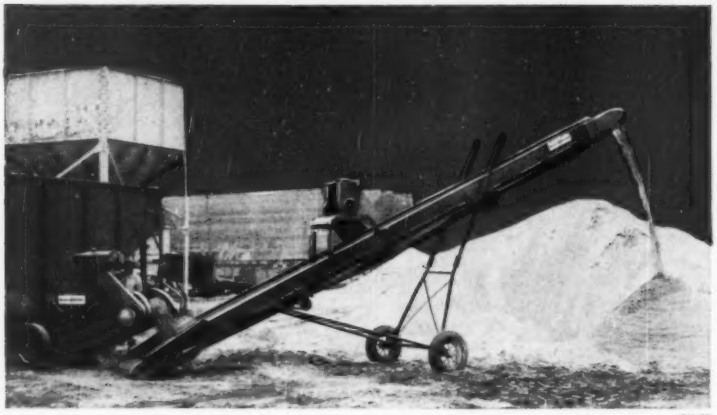
Auchter Company is using the same unloading setup to barge materials for a power plant project located on the river. Mr. Auchter points out that due to the low cost of loading the barges, it is much more economical for his company to supply material to the job site in this manner than to go to the expense of building a railroad spur into the project.

Frees Crane for Other Work

New Enterprise, Pa. **A 358 Hopper Car Unloader fitted in neatly with the needs of the New Enterprise Stone & Lime Company. It was purchased for unloading cinders from hopper bottom cars, thereby releasing an expensive crane which had been tied up on this uneconomical service. This highly portable Unloader is also being used to unload coal at one of their large storage yards near Bellwood at the rate of one 70-ton car every 55 minutes.**

PRTD. IN U.S.A. 155 M 5-49 AM

PORTABLE CONVEYOR UNLOADS 18,350 BARRELS OF BULK CEMENT



4 to 5 Cars per Day

NEGLIGIBLE CEMENT LOSS

In unloading cement from hopper-bottom cars for use on a cement stabilized highway project, the Hyde Construction Company provided one of the most rigorous tests ever confronted by any high-volume unloading equipment. It was a test that was met successfully by the B-G 363 Portable Conveyor which built up a record of 18,350 barrels unloaded—at an average rate of three cars per day. This, in spite of the fact that many were dubious of any such conveyor's ability to handle cement in such quantities. On some days, while the haul was short and the supply of trucks was plentiful, as many as four or five cars were unloaded by this economical, versatile Conveyor.

No unloader was necessary. The hopper end of the 363 was placed in a pit under a tongue-and-groove hopper and fed directly from the car. With a heavy duck cover and canvas spout, there was very little loss of cement in the unloading operations.

SAVES $30,000 ON TRUCK MIXERS BY USING PORTABLE CONVEYORS

Belleville, Ill.—A skillful combination of a B-G 363 Conveyor with a team of dry batch trucks has enabled the Hoeffken Brothers to maintain a fast-moving, ready-mix concrete business with a minimum of investment.

Hoeffken Brothers operate two ready-mix trucks. These trucks are supplied by six dry batch trucks and their B-G Conveyor. The dry batch trucks are used to enable the more costly ready-mix trucks to cut their haul down to a minimum, thereby increasing their daily capacity to the extent where additional ready-mix trucks are not required.

For one paving job located 15 miles from the Hoeffken Brothers batch plant, materials were delivered to the ready-mix trucks ½ mile from the job by the dry batch trucks. The company reports when the haul exceeded this ½-mile figure, they hooked the 363 Conveyor to the water truck and trailed it down the road to another more desirable location. The Conveyor used is 35' long with a corrugated sheet metal cover and a large hopper at the charging end. Batch trucks dump a 4-yard dry batch of concrete into the conveyor hopper and in less than 2 minutes a 4-yard ready-mix truck is ready to go. Hoeffken Brothers figure that they have saved in the neighborhood of $30,000 in over-all investment in production equipment.

Unloader-Loader Team Does Many Jobs for Cement Plant

Charleston, S. C.—Production equipment has to be kept working to pay off to the best advantage and it is on this basis that the Carolina Giant Cement Company keeps its B-G 363 Conveyor and 358 Car Unloader busy as general utility equipment on a variety of jobs all over the plant. First, they are frequently at work stockpiling coal from hopper cars along the company's rail siding. Later, the 363 is used in loading the coal from the stock pile for use in the plant.

Gypsum is brought to the plant in box cars and here the 363 is fed by hand to transfer the gypsum from the box cars to a bucket elevator which carries the material up to silos.

Recently when the plant was being altered, it was necessary to drive piling and build foundations inside of the buildings. When this was done, the 363 was used to transfer dirt through a window to the inside of the building for backfilling around the foundation.

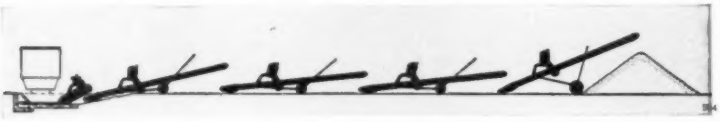
Well pleased with the general usefulness of these production tools, Mr. F. M. Murray, shop superintendent, further adds that at times the 358 Unloader has to operate under the most adverse conditions—often the lower half is in water underneath the rails. As in so many other tough jobs, the 358 gives high capacity, dependable performance even under these unsatisfactory conditions.

Foundry Cuts Coke Unloading Costs 76%

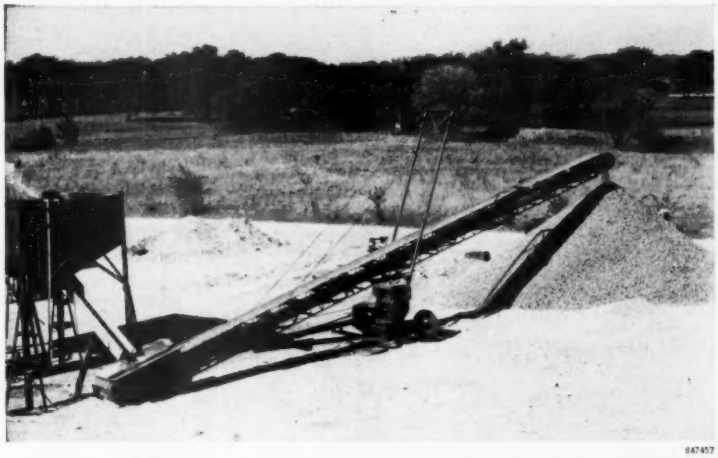
Rockford, Ill.—New, modern unloading equipment has enabled the Greenlee Bros. & Co. foundry to cut costs for unloading a car of coke from $20.00 to $4.80 per car. This substantial saving is accredited to the performance of their 363 Portable Conveyor and 358 Car Unloader—which are quickly paying for themselves in this 100-car-a-year operation.

Additional savings are reported by Greenlee Bros. through the reduction of demurrage charges due to the ability of this unloading-stockpiling "team" to get to work fast and operate steadily at maximum capacity.

Their all-material B-G Unloader and Conveyor are also used to unload fluxstone and foundry sand.



"A BEAUTIFUL RIG ON OUR SEWAGE PLANT JOB" says B-G OWNER



847457

Heavy Duty Conveyor Runs Up Total of 80,000 Tons of Stone Handled

Spans Canal in Loading Trucks from Railroad Cars

Worcester, Mass.—80,000 tons of 3¼" crushed stone for this city's new sewage treatment plant were loaded to trucks at a 1000 ton per day rate by a B-G Heavy-Duty Conveyor owned by the V. Barletta Company.

Loading up to 1000 tons per day, the 24" x 60' conveyor spanned a 15-foot canal between trucks and the railroad cars. Mr. Barletta reported that this daily capacity was limited only by the ability of the railroad to supply cars, and could have been much higher if they had been available.

Further, Mr. Barletta states, "This conveyor is a beautiful rig. There is absolutely no comparison with any other method of unloading bulk material from cars to truck or storage."

Barletta's B-G Conveyor has been widely useful in the years since it was purchased. A standard Heavy-Duty Conveyor, it is portable, equipped with full-swiveling wheels for radial stock-piling—one of the full line of B-G Portable Conveyors a ailable in belt width of 18", 24", 30" and 36" in lengths up to 150'—capacities to 400 t.p.h.

Half Million Yards of Stone Moved with Practically No Maintenance

Montgomery, Ill.—Nineteen years ago the Fox Valley Gravel Co. bought a Heavy-Duty Portable B-G Conveyor and put it to work in their quarry. At that time, it was an 18" x 30' Conveyor. Today it is an 18" x 60' Conveyor with a total of 500,000 yards of crushed stone to its credit.

H. C. Leppert states it's an impressive record and backs his opinion with a cost sheet that shows the replacement of only one belt carrier in nineteen years.

This conveyor is equipped with all-welded, plain-bearing belt carriers that are noted for rugged endurance. Typical of all B-G "Portables," it is built up of Standardized Sections and is easily shortened or lengthened as in the case here, where it was lengthened to 60' when the need arose.

County Stockpiles 70,000 Yards with Zero Dollars Spent for Repairs

Geneva, Ill.—The Kane County Highway Department furnishes added evidence of the usefulness and low operating expense of B-G Heavy-Duty Portable Conveyors in a recent report. The conveyor has seen constant service during the winters since 1944—stockpiling 70,000 yards of crushed stone for use in summer highway work—and they have yet to spend a penny for replacement of any part. An 18" by 60' unit, their B-G Conveyor helps materially in promoting low cost highway maintenance.

Have you seen the B-G City?

Here is a novel and interesting color illustration of the imaginary Barber-Greene City, showing almost countless operations in material handling, ditching and bituminous construction.

Write for your free copy.

Peach Pits by the Yard Via Versatile Portable Conveyor

Los Angeles, Cal.—Peach pits, walnut shells, apricot pits and the like are not allowed to go to waste by progressive food industry operators such as the Agrashell Corporation, producers of insecticides, resins and oils. And companies such as this are turning to the B-G Model 363 Portable Conveyor as an ideal means to handle this exotic bulk material in large quantities on a steady, day-in and day-out basis. Here the material is brought to the plant in side-dump gondola cars and fed through a portable hopper to the receiving hopper of the B-G Conveyor. The 363 transports material into the plant for further processing.

846372

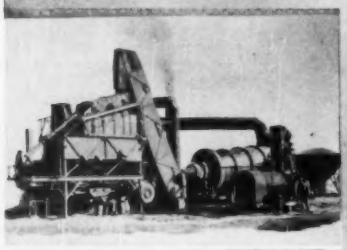
THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:

B-G BUCKET LOADERS: Crawler or pneumatic-tire mounted. For low cost truck loading of bulk materials. Capacities up to 3 cu. yd. per min.

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" wide, 4' deep to 24" wide, 8' 3" deep.

B-G PERMANENT CONVEYORS: Complete, standardized equipment including carriers, take-ups, drives, frames, etc.



B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 T.P.H.

B-G FINISHERS: Automatically place smooth level surface regardless of variations in subgrade.

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

Use Barber-Greene's 30 Years of Experience to Help You Plan Your Job. It can be Valuable and is at Your Service

It always pays to eliminate guess work. Barber-Greene offers you the benefit of over thirty years experience in designing and building equipment proved year after year on jobs—and in industries—like yours. Barber-Greene's Representatives are material handling specialists with practical experience in successfully applying the right machine to jobs like yours. Consult your Barber-Greene Distributors, or write directly to Aurora, Illinois, for information you need to do your job most profitably.

Barber-Greene Company
Aurora, Illinois
Cable address "Bargreene"

Send information on the Barber-Greenes checked below as indicated:

- ☐ 363 Conveyor
- ☐ 358 Unloader
- ☐ Heavy-Duty Conveyor of_____belt width, _____length and or _____capacity
- ☐ _____
  Other B-G Equipment
- ☐ Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

Before You Bid . . . Before You Buy . . . Send This Coupon!

The coupon will bring you complete information on any Barber-Greene machine without cost or obligation.

We will be glad to have our representative call to discuss your material handling problems with you.

We maintain a Department for the sole purpose of solving your material handling problems.

BARBER-GREENE COMPANY
Aurora, Illinois

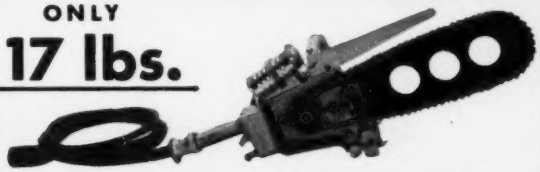
For Limbing and Trimming You Can't Beat the NEW

HOMELITE

FEATHERWEIGHT

One Man Electric Chain Saw

ONLY 17 lbs.



Complete with a 14 inch Blade and Chain

It's the height of efficiency for off-the-ground cutting

First, feel the heft of it . . . only 17 pounds . . . perfect for working up in trees. Yes, by all means, feel the cut of it . . . the *fast, smooth* cut of it.

Built with a narrower kerf and simpler design, this new, featherweight, high-cycle, Homelite Chain Saw requires less power to operate. Therefore it cuts faster. Moreover, binding and chattering are eliminated . . . the life of the chain is greatly increased.

Built for every-day, continuous service, Homelite's newest addition to its chain saw family is the last word in safety, simplicity and economical operation. No brushes or commutator to replace or repair. No clutch to adjust. No servicing except periodic cleaning and lubricating.

Powered by a Homelite Carryable Dual-Purpose Generator

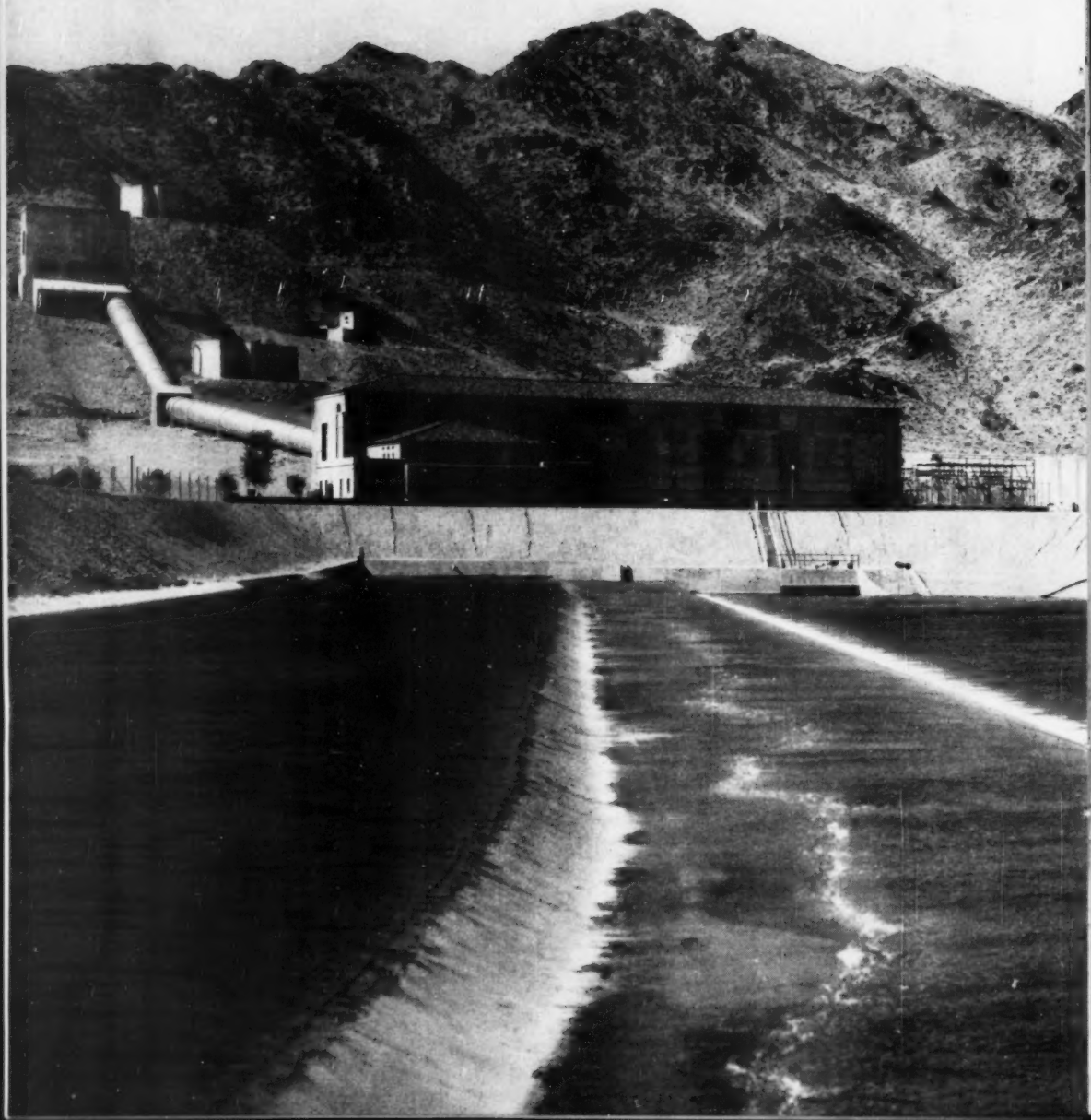
This new 17 pound chain saw, like the other larger Homelite Electric Chain Saws, operates from a Homelite gasoline-engine-driven-Generator that provides plenty of power for not only high-cycle tools, but also standard 110 volt electric tools and floodlights as well.

Write, right now, for complete information.

HOMELITE
Corporation
107 RIVERDALE AVENUE
PORT CHESTER, N. Y.

MANUFACTURERS OF HOMELITE CARRYABLE PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

Water...481 Miles



from Home!

Southern California Water Supply Depends on Reliable Allis-Chalmers Equipment

HAULING WATER over and through mountains for 481 miles is an enormous task. Yet, that's the length of the longest pipeline of the Metropolitan Water District of Southern California. Bringing water from the Colorado River to the homes and businesses of Southern California has made possible the rapid growth of that area.

Included in this gigantic system are 45 mountain tunnels, 7 reservoirs, 5 pumping stations, water softening plant, filtration plant and hundreds of miles of acqueducts and pipelines. Today the system efficiently serves Los Angeles and 20 neighboring communities having a combined population of over 3,000,000.

The Iron Mountain Pumping Station (shown here) is Allis-Chalmers equipped. Three 90,000 gpm pumps, operating against a 144 ft head, force water into a tunnel in the mountain. Specifications demanded 88 percent efficiencies from pumps but all A-C units tested 91.3 or better. Three vertical synchronous motors of 4300 hp each drive the pumps. All A-C equipment, operating since 1939, have delivered reliable service.

The same kind of fine equipment engineering that went into the pumps and motors of this great system is available for your community, whether large, medium or small. Today, Allis-Chalmers offers you the world's widest range of public works equipment. For additional information call your nearest A-C office or write direct.

A 2600

ALLIS-CHALMERS, 1185A SO. 70 ST.
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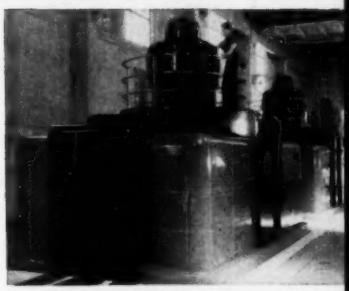
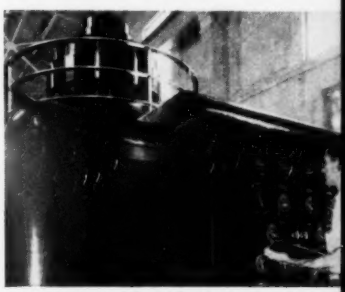
A-C Provides Pumps and Motors for Southern California Pump Station



SYNCHRONOUS MOTORS, 4300 hp each, are of rectangular design, accommodate cooling coils. Housings protect against entrance of sand and dust.



GAUGE CABINET for indicating cooling water and oil condition of motor. Cooling is accomplished by fans which recirculate the air within the motor.

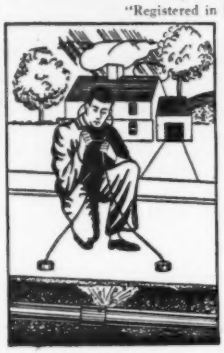
GIANT PUMPS are rated 90,000 gpm and are designed with a 48 in. discharge. The impellers measure 78⅛ in. and are driven by 20 in. shafts.

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—Biggest of All in Range of Industrial Products

GEOPHONE locates leaks without digging

"Registered in U. S. Patent Office"



When the discs are placed on the ground (as pictured) the Globe Geophone detects by sound the exact location of leaks in water or steam pipes. Acclaimed for its accuracy, the Globe Geophone has become indispensable in Public Works Departments and Industrial Plants throughout the United States.

• MONEY-SAVING

You save the costly expense of extensive surveys, excavating and replacing. The inexpensive Globe Geophone pays for itself many times over in money saved.

• ACCURATE

Operating on the principle of the seismograph, the Globe Geophone is without question the most sensitive and reliable instrument for detecting underground leaks.

Complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap..... **$85**

Pipe Phone.....$3.70
(Aquaphone)

Globe Phone Mfg. Corp. Reading, Mass., USA; Dept. Y

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Pumps 9000 gph

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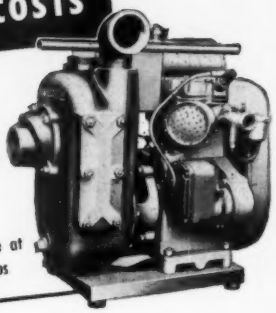
Weighs only 105 lbs.

High head performance at price of low head pumps



The first feather-light pump with big capacity and pressure, armored against wear with stainless steel shell fitting, hardened liner plate and impeller, and long-life Lubri-Seal. Powerful new Wisconsin ABN engine, maintains big volume even at heads well above 100 feet. Two men easily carry its 105 lbs. Also available on cushion or pneumatic tires. Ask your Jaeger distributor or send for Bulletin LP-9 and prices.

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COMPRESSORS • MIXERS • HOISTS • PAVING EQUIPMENT

KLETT SUMMERSON ELECTRIC PHOTOMETER

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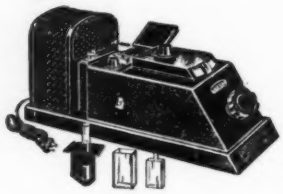

Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

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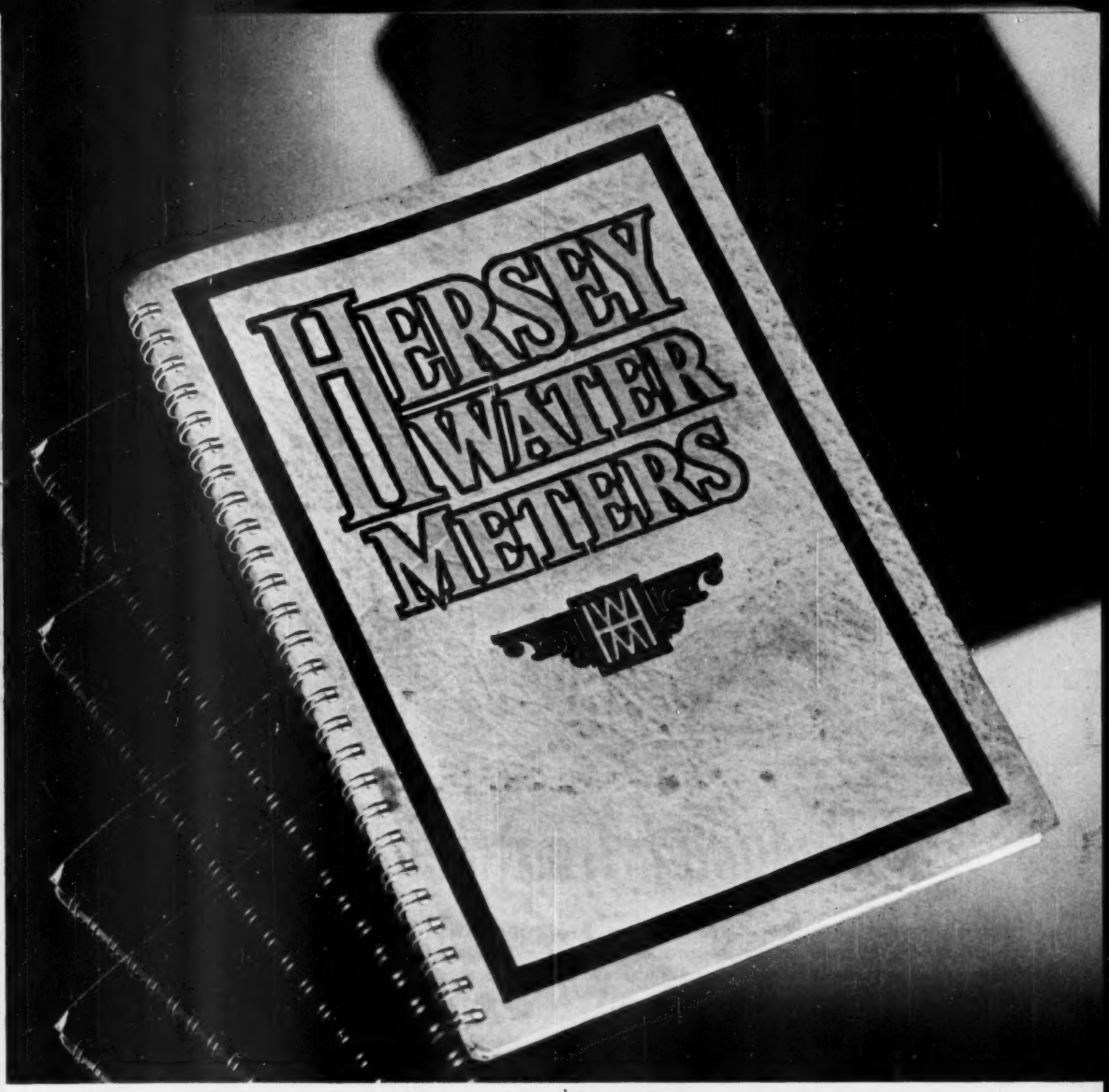

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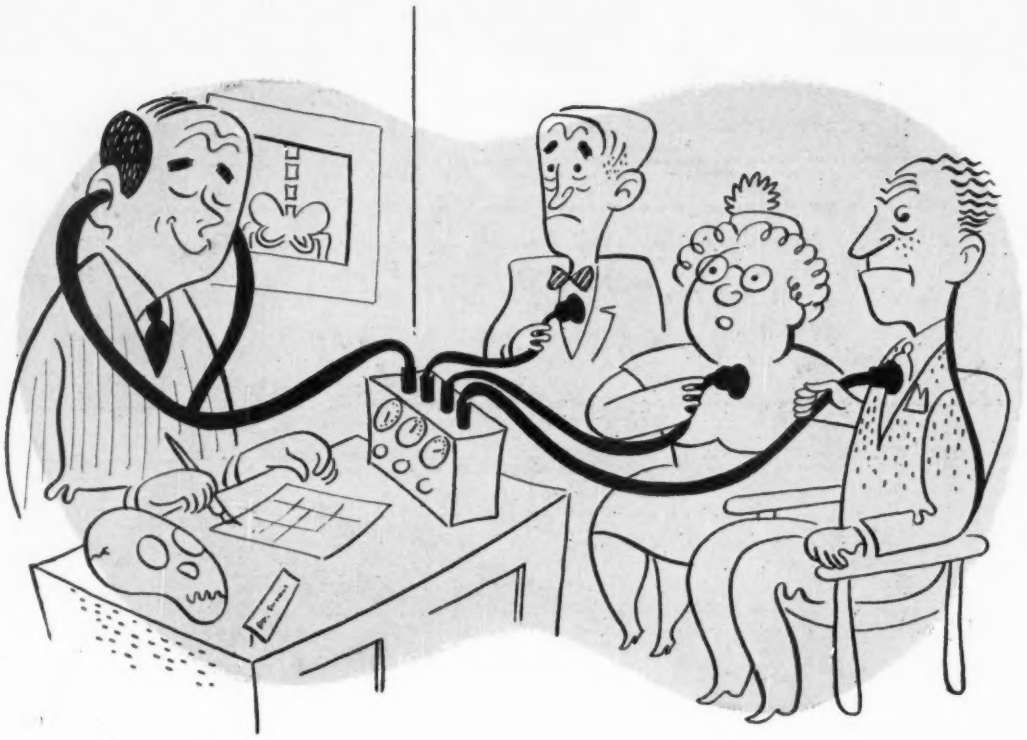

Reduced Treatment Costs

Less load at the disposal plant—and, therefore, a reduction in sewage treatment costs—is one of the practical advantages that often result from the use of Transite* Sewer Pipe.

There are two good reasons for this:

(1) Transite's special sleeve-type joints that cut sewer line infiltration to a minimum.

(2) Transite's long 13-foot lengths that reduce the number of joints in the line—an additional safeguard against infiltration.

Besides the immediate saving in treatment costs, this reduction in load also enables plant capacity to be conserved for future needs. And, where new treatment facilities are planned, it permits consideration of a smaller plant . . . with possible important economies in disposal equipment.

Other Transite Economies . . . Transite has an exceptionally smooth interior that reduces resistance to flow. This, combined with its long lengths that help maintain uniform grades, plus fewer joints that reduce turbulence, often permits designing the system with flatter grades and shallower trenches. Or, as an alternate economy, pipe of smaller diameter may be specified.

Transite Sewer Pipe is made of asbestos, cement and silica by a special method of manufacture which develops high, uniform strength and resistance to corrosion. It is available in four strength classes in sizes to 36". This permits selection of the pipe best suited to trench conditions, frequently eliminates the need for concrete cradles.

For further details, write Johns-Manville, Box 290, New York 16, N. Y.

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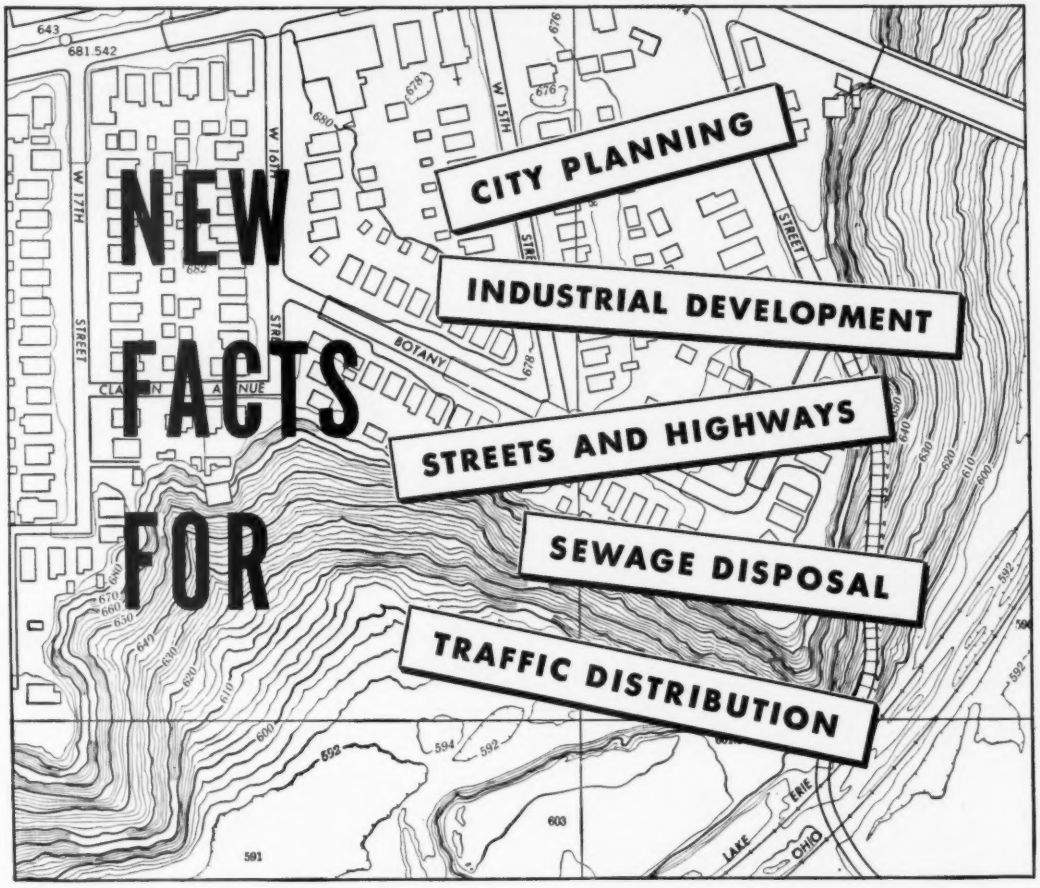
TRANSITE SEWER PIPE...



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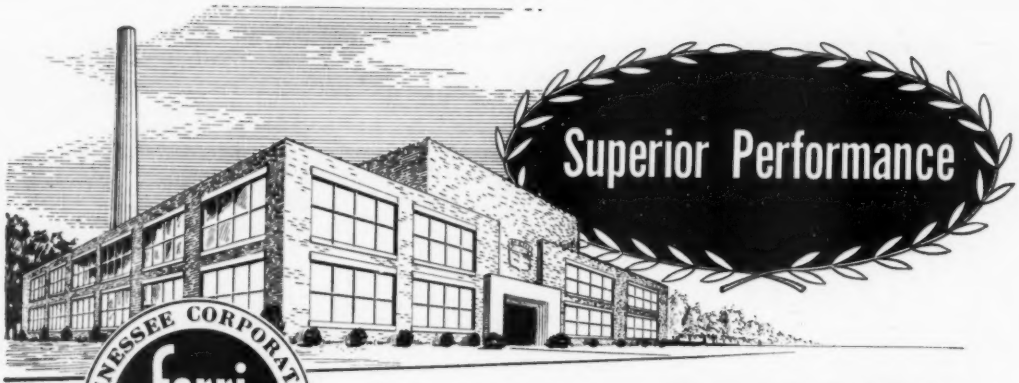

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Ferri-Floc
FERRIC SULPHATE
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SEVEN ADVANTAGES OF FERRI-FLOC

1. Coagulation is effective over a much wider pH range than with other coagulants. Color flocs may be formed in the very acid range where other coagulants may not be employed. On the other hand, true hydrated ferric oxide flocs may be formed at pH 9-10 or even higher for the removal of turbidity and manganese.
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Many of the country's larger plants are now recognizing the advantages offered by Ferric Coagulants and are taking advantage of them through Ferri-Floc. — Ferri-Floc eliminates the troubles encountered with other coagulants by improving general quality, reducing overall cost. — All of this is accomplished without costly changes in plant equipment.

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Atlanta, Georgia — Lockland, Ohio

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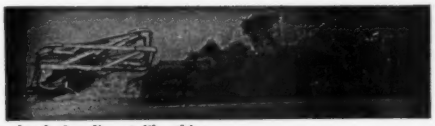
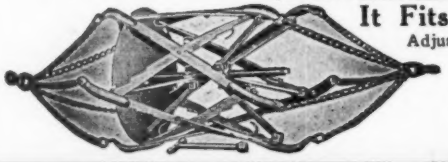


Open and in action removing roots and caked sediment like this.



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Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

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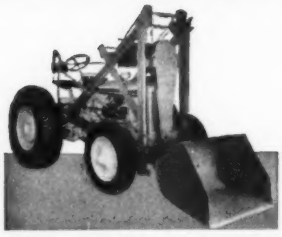

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for Industrial Tractors

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Clay Liner Plates

SALVAGE RELIEF SEWER SYSTEM

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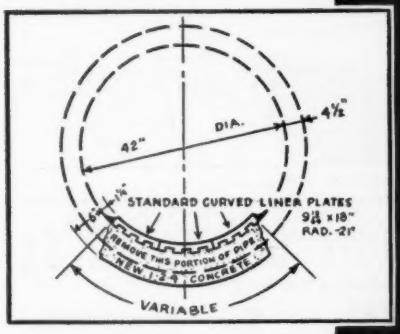

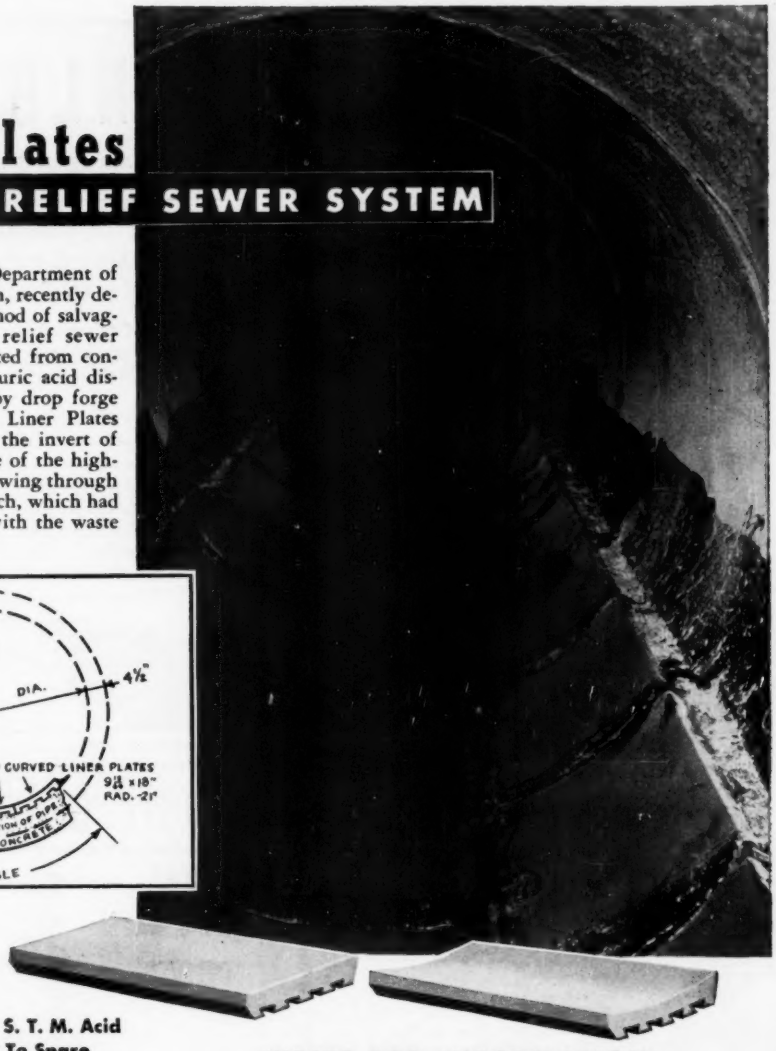

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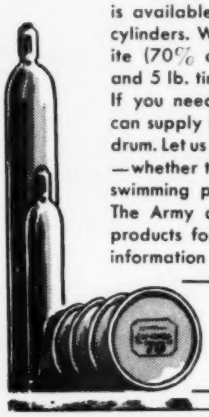

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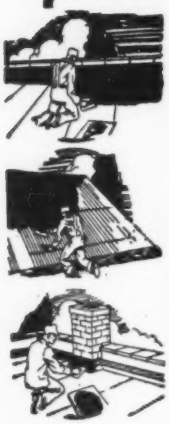

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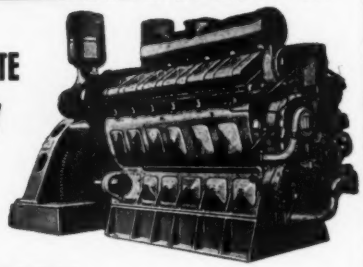

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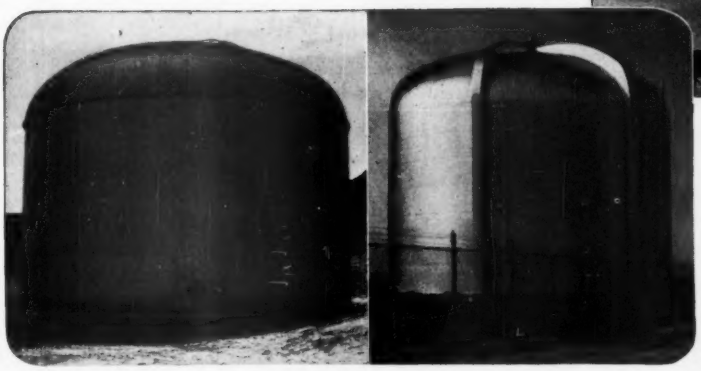

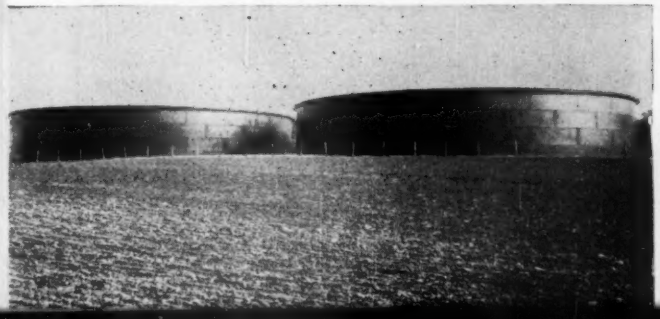

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"One of America's Safest Cities"
THE MATHEWS FIREMEN SAY

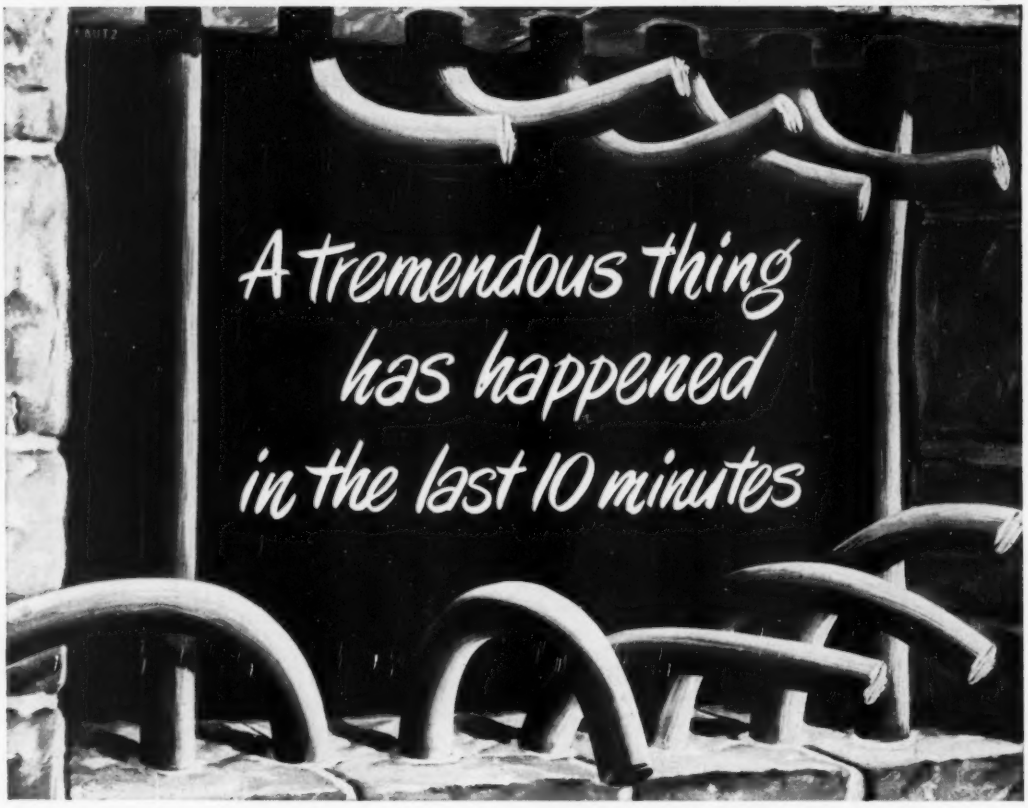
They never said a truer word, because Battle Creek, Michigan is protected by Mathews Modernized Hydrants—and where Mathews are, there is safety *plus.*

These great hydrants give long, troublefree service because of their simplicity of design and accessibility for service. All working parts are contained in a removable barrel; if replacement is required, as when the hydrant is knocked over by a truck, a spare barrel can be inserted in a few minutes, and without excavating. The stuffing box plate, cast integral with the nozzle section, prevents water and silt from reaching the operating thread. An iron shield guards the bronze revolving nut against rain and dust. Free and quick operation is assured at all times.

Send for illustrated folder setting forth point by point the many features that make Mathews Modernized Hydrants the shrewdest buy for every safety-minded community.

OTHER MATHEWS FEATURES: Head can be rotated 360° Replaceable head • Nozzle outlets easily changed • Nozzle levels raised or lowered—no excavating • Drains dry after use Only one part to lubricate—the operating thread • A modern barrel makes even the oldest Mathews new

MATHEWS HYDRANTS
Made by R. D. WOOD COMPANY
Public Ledger Bldg., Independence Sq., Philadelphia, Pa.
Manufacturers of "Sand Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves



They say dictatorships are new and revolutionary... Actually, they're as old as time itself!

For thousands of years, most of the human beings who have peopled the earth have lived as the slaves or subjects of someone else.

The thing that is new and revolutionary and yours, is *freedom.*

Freedom to choose your job and to bargain collectively, knowing that in America there's no ceiling on advancement.

Freedom to invent new machines . . . and new ways to make them productive . . .

Freedom to invest money in new ideas . . . to *own* things . . . to manage our own affairs.

Freedom to mass-produce more and better goods all the time . . . with lower costs reflected in consumer prices and higher real wages.

Compared to the record of all civilization, this free way of yours is ten minutes old!

Yet in ten short minutes it's done *more good for more people* than anything that ever happened on earth.

In war, it enabled you in America to outproduce the rest of the world combined.

In peace, it's given us a standard of living ten times higher than that of the nation which shouts loudest that we have a dying economy.

Dying? We've just begun to live! We've just escaped from prison. If the way we live is ten times richer than theirs, that's not enough.

We can make it better still. We can eliminate the faults which remain. We can level off the sharp ups and downs of prices and jobs. We can make the final attack against poverty.

Today, the world is depending on us because we have depended on *ourselves.* Let's show others how that system works!

We can—if we'll work together and build together as Americans always have.

Let's keep on building. Build for Freedom . . . build for peace . . . build for a better world!

THE BETTER WE PRODUCE
THE BETTER WE LIVE

Approved for the PUBLIC POLICY COMMITTEE of the Advertising Council by representatives of Management, Labor and the Public:

EVANS CLARK, Executive Director, Twentieth Century Fund.

PAUL G. HOFFMAN, Formerly President, Studebaker Corporation.

BORIS SHISHKIN, Economist, American Federation of Labor.

Published in the Public Interest by:
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Send for this valuable booklet today!

In words and pictures, it tells you

—How our U. S. Economic System started
—Why Americans enjoy the world's highest standard of living
—Why we take progress for granted
—How we have been able to raise wages and shorten working hours
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—Why the mainspring of our system is productivity
—How a better living can be had for all

MAIL THE COUPON to Public Policy Committee, The Advertising Council, Inc., 25 West 45th Street, New York 19, N. Y.

NAME_____

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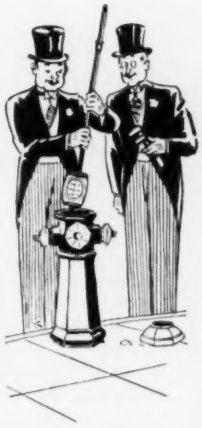
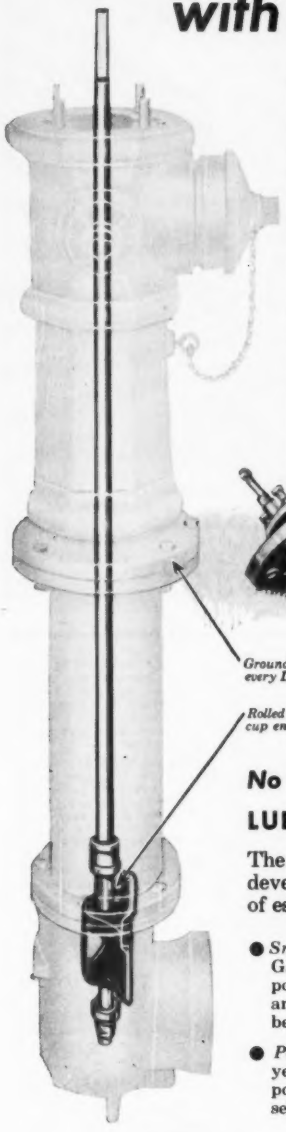
SERVICE . . . .

with a monkey wrench!



A hydrant must allow easy inspection and servicing. The *best* hydrant, therefore, permits the removal of all working parts as one unit. To inspect or service a Ludlow Slide Gate Hydrant you'll need a wrench — that's all. Just take off the top of the hydrant and lift out the stem, *without unscrewing anything below ground.* The entire mechanism, including the gate, bronze wedge nut and drip assembly is attached to the stem.

But . . . *first* turn off the water!



Ground Line Flange is a standard feature with every Ludlow Hydrant.

Rolled Everdur Screw Stem is pinned into the cup end of the cold-rolled steel stem.

LUDLOW FIRE HYDRANTS

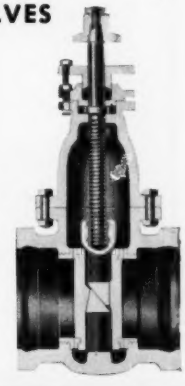
Shown here is the distinctive Ludlow List No. 90, a hydrant of the highest quality, now serving in thousands of cities and towns. It employs the Ludlow Slide Gate principle, famous since 1880, and (in addition to easy servicing) offers the following advantages:

- *Quick Water* with least possible shock and pressure loss. Proper shut-off without water hammer.
- *Proper Drainage*, automatically, at lowest point when closed.
- *No Flooding.* Wedge-locked when closed. Accidental breaking will not cause flood. Hydrant head breaks at ground line is easily replaced without excavation.

No Ludlow Fire Hydrant has ever failed in line of duty!

LUDLOW AWWA DOUBLE DISC GATE VALVES

The parallel seated, double wedge type slide gate valve, developed and perfected by Ludlow, provides a number of essential benefits.



- *Smooth, Positive Operation.* Gates positioned directly opposite ports before wedging, and entirely unwedged before being raised.
- *Positive Closure.* Even after years of service in the open position; flexible-action gates self-adjusting to seats.
- *Simplicity!* Only 2 parts in the wedging mechanism! These are extra heavy, with ample reserve strength and wear resistance for years of constant service.
- *Ready Replacement of Parts.* Simple construction with ample tolerances, permitting ready replacement of parts.

Made in sizes from 2" to 72", N.R.S. and O.S.&Y. with all types of connections.

95

TRADE LUDLOW MARK

The LUDLOW VALVE

SINCE 1866

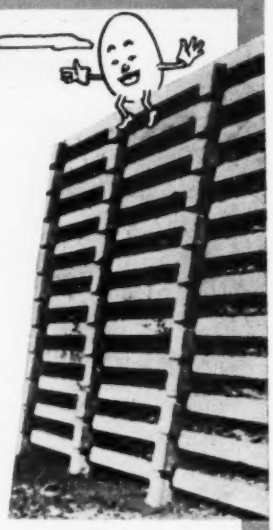
MFG·CO·INC·TROY·N·Y·

like Humpty Dumpty . . .

Old ideas and costs take a tumble

when you build retaining walls of Universal Concrete Cribbing

If you have retaining walls to build, investigate this thoroughly proved, fast, economical method. Pre-cast concrete cribbing is easily laid up by unskilled labor with perfect results. Minimum preparation — no footers, no forms, no drainage problems — maximum beauty and efficiency result. Build it straight or curved, to any height. It's permanent as the pyramids yet 100% salvagable if removed. Hundreds of installations prove its versatility and complete success under practically all conditions.



Available "open face" (above) and "closed face." Write for: *Bulletin* C-49.

Finer Concrete Pipe

Universal Pipe sets new higher standards of strength and uniformity. If you're near one of the plants listed at right, you can be sure of any amount, any size of the world's finest concrete pipe.

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All Sizes All Types

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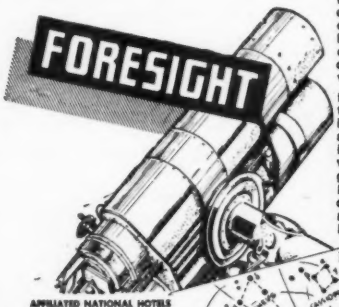

In predicting the course of the planets and their satellites, our scientists devote their lives to charting the universe. . . .

In hotel operation, too, foresight is an invaluable prerequisite. In anticipating the needs and wishes of their guests, Affiliated National Hotels chart a program of more prompt service for you.

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HOTEL CAVALIER ..... Galveston
HOTEL PLAZA ..... Laredo
HOTEL LUBBOCK ..... Lubbock
HOTEL FALLS ..... Marlin
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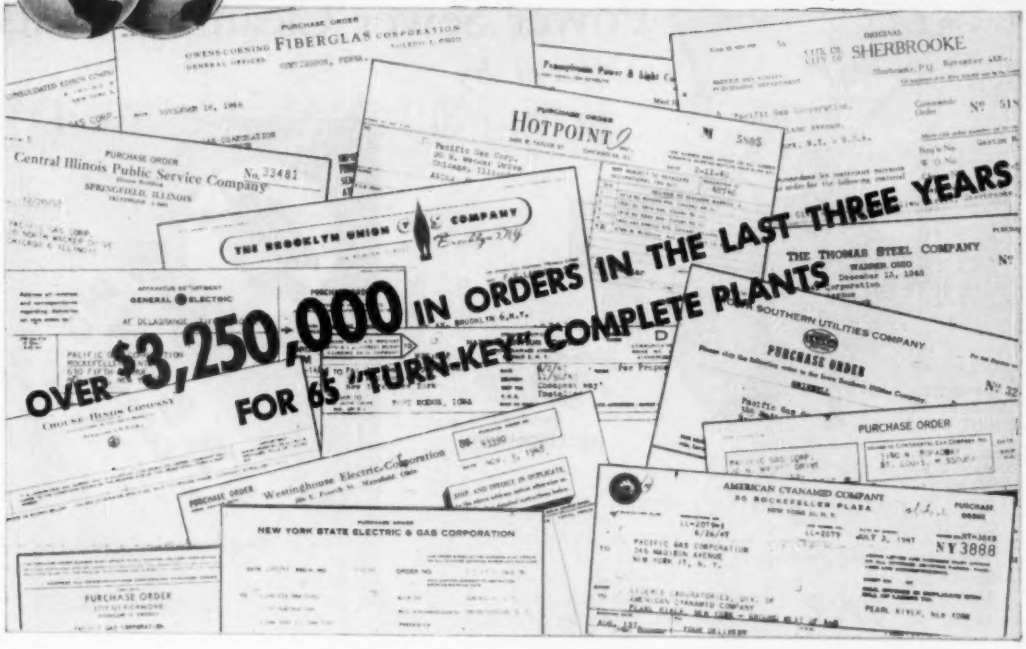
FIRST WITH THE LEADERS !

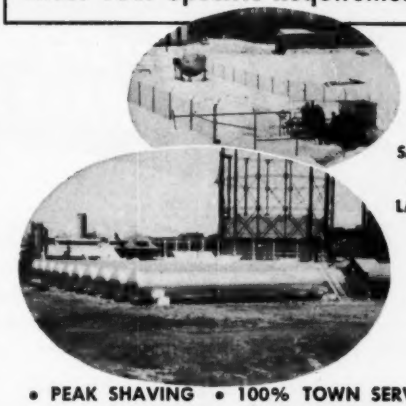


FROM coast to coast, Canada to Cuba, PGC has supplied hundreds of leading industries and utilities with "tailor-made" LP-Gas plants. Years of engineering, designing and constructing hundreds of installations of all types and sizes, have demonstrated PGC's specialized "know-how."

Let this specialized experience help you. Whatever your need may be—a manually-operated "one-tank job"; or largest automatic multi-tank installation—PGC's engineers will design, construct, install and fuel the plant which guarantees you greatest efficiency . . . affords you greatest savings in time and money.

Assured supplies of Propane gas are available at favorable prices, and ample tank cars now guarantee delivery any time of the year . . . any place in the nation. An experienced PGC engineer will be glad to explain what PGC can do for you. Your plant can be ready for next winter—if you act promptly.

PGC Plants are Engineered to Meet Your Specific Requirements



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• STANDBY • BOTTLED GAS

Pacific Gas Corporation

SPECIALISTS IN LIQUEFIED PETROLEUM GAS • MARKETING • ENGINEERING • UTILIZATION • CONSTRUCTION

Modernize—Powerize—Economize!

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TURCO MAXI-POWER UNIT NO. 2

Models
VF3—Water-Cooled
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Write for this catalog and get Maxi-Power specifications.

EXCLUSIVE FEATURES:

1. Tubular frame
2. Forged, inclosed gearing
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4. Flange ball-bearings
5. Designed level wind
6. 3-speed transmission
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8. No-clutch free spooling
9. Selected speeds
10. Bucket swing positioner

YOU "SHOULD HAVE IT!

THIS *Complete* SIGN CATALOG

Tell the motorists *what to do* with Miro-Flex, America's finest embossed sign line. Find out about the complete line from our latest catalog. *It's just off the presses!*

Reduce traffic trouble the Miro-Flex way. Order Miro-Flex signs plain embossed or reflectorized, either standard or specials. Send now for new catalog of stock signs, including two and four way street name assemblies.

7-49

MANUFACTURED BY

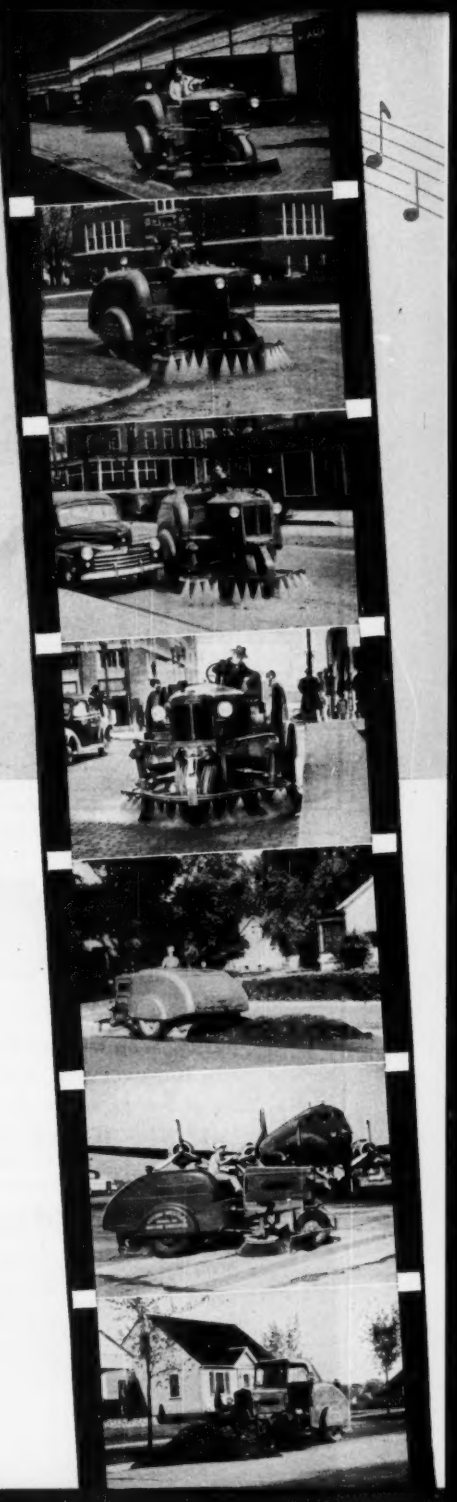
MIRO-FLEX CO., INC.

1824 EAST SECOND STREET · WICHITA, KANSAS

East Side! West Side!

AUSTIN-WESTERN *Presents the* MODEL "40" MOTOR SWEEPER *in*

ALL AROUND THE TOWN



Pacemaker in performance, the Model "40" Sweeper is the culmination of 30 years of experience in designing and building motor sweepers. Model "40" sweeping is low-cost sweeping. Every mile of clean-swept street and gutter behind a Model "40" represents substantial savings in dollars and cents—savings over antiquated hand methods of pan and broom—over less modern types of sweepers with cumbersome and costly elevators and conveyors. Fast, clean-sweeping, superbly maneuverable, the Model "40" answers the problems of state and municipal cleanliness in parks, streets, alleys, and on highways. From end to end it's built to do a cleaner, better job than any sweeper ever manufactured.

The new sound-and-color movie "All Around the Town" tells the whole story. Your nearby Austin-Western distributor will be glad to arrange a showing in your community.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

Austin-Western

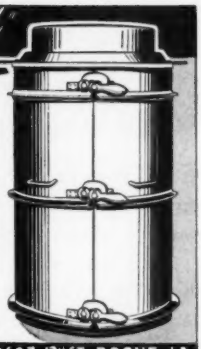
Quality Waterworks Material
for over 40 years

Send for Catalog "J"

JAMES JONES CO.

201 LeRoy Street Los Angeles 12, Calif.

THE "Quinn Standard"
FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.
Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1623 12TH ST. BOONE, IA

New . . . Permanent

HOLD EVERYTHING!
SEE THE NEWEST AND BEST

LAKE SHORE

PERMANENT ALUMINUM STREET SIGNS

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Wire or Write Today for Complete Information

Catalog #20-5 Illustrated

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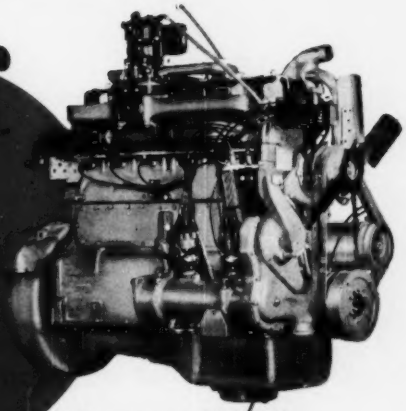
Div. of Lake Shore Pattern Works

654 W. 19th Street, Erie, Pa.

Packed with Power FOR Fire-Fighting Service!



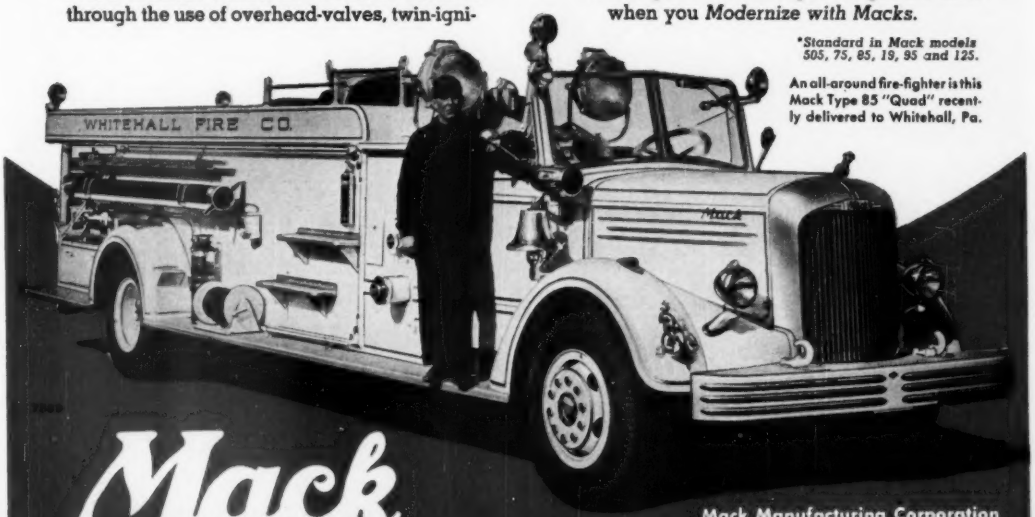
The Famous MACK THERMODYNE Engine

• Serving more than 1,000 communities from coast to coast, Mack apparatus is widely regarded as the finest in fire-fighting equipment. One powerful reason for its popularity is the famous Mack Thermodyne Engine—specifically designed by Mack engineers for fire-fighting service, built in Mack plants, and found only in Macks.*

Time-tested yet constantly improved, the Thermodyne is a six-cylinder engine for greatest simplicity of design and reliability of operation. Maximum utilization of fuel is obtained through the use of overhead-valves, twin-ignition, and the exclusive Mack combustion system. Its great power is delivered at relatively low engine speeds — resulting in less wear and strain, and easily mastered pumping and pulling demands. Thermodyne design and construction throughout explains why the expression "Built Like a Mack" typifies rugged strength and power.

Product of the greatest research, engineering and manufacturing facilities in the field, every Mack — in every detail — is built to be a leader. Wherever your department and whatever its needs, you'll be sure you've got the best when you *Modernize with Macks.*

*Standard in Mack models 505, 75, 85, 19, 95 and 125.



An all-around fire-fighter is this Mack Type 85 "Quad" recently delivered to Whitehall, Pa.

Mack FIRE APPARATUS

Mack Manufacturing Corporation
FIRE APPARATUS DIVISION
Long Island City 1, N. Y.

Factory branches and dealers for parts and service in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

YOU CAN TELL IT'S A BAKER BY THE LOAD ON THE BLADE

Sure sign of a Baker Bulldozer — a hefty load on the blade — which adds up to more and lower cost yardage per shift. The reason more and more experienced earthmovers are insisting on Baker Bulldozers.

You'll find Baker the answer to your problems too. Simplicity of design and construction — ease and accuracy of control — tremendous down pressure — and the most reliable and dependable hydraulic system in the industry. Facts you can prove to yourself on your own job.

Before you buy any bulldozer — see your friendly Baker - Allis-Chalmers dealer first.

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They Go Together

BAKER HYDRAULIC BULLDOZER AND A-C HD-19 TRACTOR

WHAT TYPE DOMESTIC METER DO YOU NEED? . . .

We make both the disc and oscillating piston type meters in domestic sizes. We make these two designs so as to better serve our customers.

Our study of varying conditions in water plants throughout the country definitely establishes that a single type of meter is not the answer to all metering problems.

What type domestic meter should you use, disc or piston? In many cases experience or personal preference dictate the choice. Those in doubt are invited to consult with a Pittsburgh-Empire representative.

You can rely on him for an impartial recommendation as to the type of meter best suited to your local water conditions.

PITTSBURGH EQUITABLE METER DIVISION

ROCKWELL MANUFACTURING COMPANY

This

EMPIRE OSCILLATING PISTON METERS

Type 12

Type 14

Made with Empire balanced oscillating piston, famous since 1884 for accuracy and durability. Type 12 meter has bronze case with breakable bottom plate to protect interior parts from frost damage. Type 14 is a bronze bottom plate model for warm climates. Sizes ⅝-in., ¾-in., 1-in.

or This

PITTSBURGH NUTATING DISC METERS

Arctic Type

Tropic Type

The highest quality measuring instruments of this type. Durably constructed to give years of uninterrupted service. Arctic type is protected against damage from freezing by breakable frost bottom. Tropic type has split case, all bronze housing. Sizes ⅝-in., ¾-in., 1-in.

ROCKWELL

PITTSBURGH-EMPIRE *Water Meters*

WORLD'S LARGEST DIESEL ELECTRIC PUBLIC UTILITY

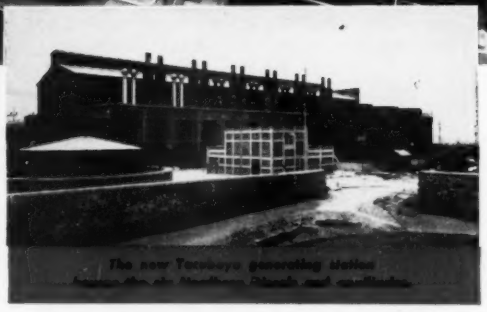
powered with

SIX 8650 H.P. NORDBERG DIESELS

... On The Line 20 Months From Date Of Order

THE installation of six 8,650 horsepower engines in the new Tacubaya generating station in Mexico City establishes another record for Nordberg Diesels. In addition to being the world's largest Diesel powered public utility generating station, these engines are the largest ever built in the Western Hemisphere. These six engines have a total capacity of 51,900 H.P. at sea level or 44,400 H.P. at the installed elevation of 7,450 feet. This new plant, adding 30,000 K.W. for the power and lighting needs of Mexico City, was in service months sooner than was possible with any other type of power unit and is helping to alleviate a serious power shortage that had developed because of the increased demands for electric service.

Nordberg Diesels have long been recognized for their reliable and economical performance. Nordberg is proud of having supplied the engines and assisted the Compania Mexicana de Luz Y Fuerza, S.A. and the Comision Federal de Electricidad in the design of this mammoth public utility.



The new Tacubaya generating station

● In addition to the 8,650 H.P. units installed here, Nordberg also builds an extensive line of Diesel and gas burning engines in two and four-cycle types for stationary and marine service from 10 H.P. up.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

P849

A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

"Have not purchased any other than Badger meters since 1924"

This is what the Service Manager of one city's Gas & Water Department wrote to another city:

"These meters have given such excellent service, and the repair cost is so low, that we have not purchased any other type of meter since 1924. It is a pleasure to recommend Badger Meters to you".

In over 5000 communities, waterworks men know that "It pays to BUY BADGER".

Every waterworks superintendent should have the NEW BADGER CHART No. 689 (Practical Plan for Meter Storage Rack). WRITE today for this chart...no charge.

You will find a Badger Meter size and type for every waterworks service. Shown here are Model SC-SOT (for warm climates), and Model A-SOT (for cold climates) . . . sizes ⅝" to 1¼" . . . other sizes up to 12". Write for complete information and prices.

BADGER METER MFG. CO., MILWAUKEE 10, WIS.

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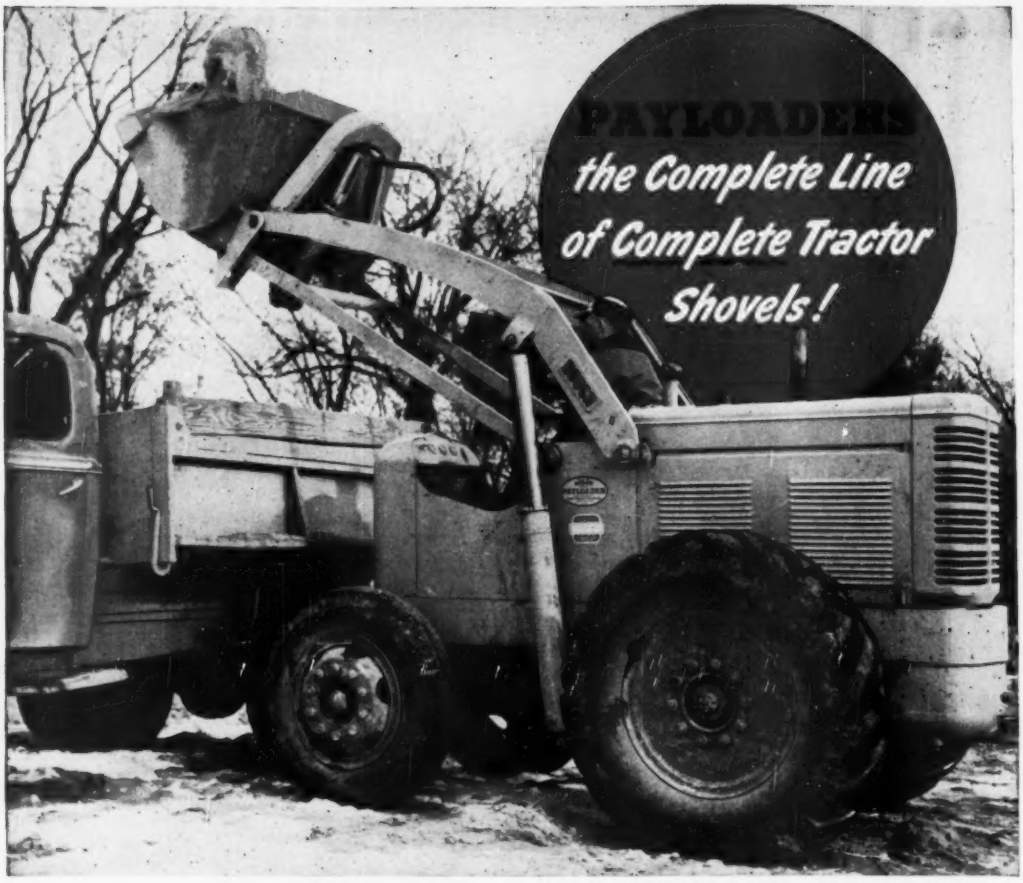
BADGER Water METERS

ACCURACY · LOW-COST MAINTENANCE · DURABILITY · SENSITIVENESS



Payloaders are *complete* tractor shovels—not tractor attachments. Shovel *and* tractor are designed and built as a unit in the Hough plant. The tractor itself is, therefore, designed specifically for shovel work with features that guarantee greater production, more satisfaction, wider range of usefulness. Several speeds in each direction . . . quick, easy-acting forward-reverse control . . . operator location for fullest visibility . . . compact, stable design for speed of operation, maneuverability and safety . . . large pneumatic tires all around—are some specific advantages built into the Hough Payloader *tractor.*

Important *shovel* features include automatic bucket tipback that prevents spilling; powerful bucket crowding action; fingertip-controlled hydraulic power to lift, lower, dump and *close* the bucket. Loads are dumped fast or slow as desired; trucks are saved from loading shocks; production is speeded.

Payloaders are built in a complete line—four sizes from 1½ cu. yd. down to 10½ cu. ft. bucket capacity. Bulldozer Blade and Crane Hook attachments are also available as well as buckets for special uses. If you want to know how efficient and useful a wheeled tractor-shovel can be for your digging, loading, grading and material handling work, get the facts on Payloaders. They're backed by 28 years of experience in the design and manufacture of tractor-shovels. The Frank G. Hough Co., 710 Sunnyside Avenue, Libertyville, Illinois.

SEND for FREE LITERATURE on any of the four sizes of PAY-LOADERS: the 10½ cu. ft. Model HA, the ¾ yd. Model HF, the 1¼ yd. Model HL or the 1½ yd., 4-wheel drive Model HM.

SAY HUFF

HOUGH

PAYLOADER

Manufactured by THE FRANK G. HOUGH CO.

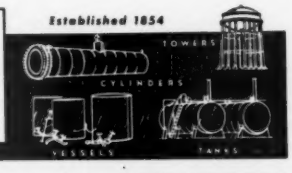
COLE
GAS STORAGE TANKS

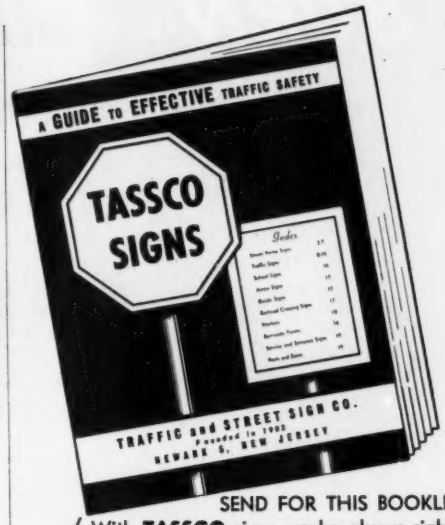
● Whether you want conventional high-pressure units or something *special*—send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require—any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you.

Send us your inquiries for tanks of all kinds. Write for CATALOG—"Tank Talk".

R. D. COLE
MANUFACTURING CO.
NEWNAN, GA.

Established 1854





SEND FOR THIS BOOKLET
With **TASSCO** signs, you're always right:—
They're bright by day and bright by night!

TRAFFIC AND STREET SIGN CO.
NEWARK 5, NEW JERSEY

The Heiloader hydraulically-operated truck tailgate handles a 2000-lb. capacity load. Saves time and money.

Heil Bodies and Hoists
assure less downtime..because

Heil's contractors' body has V-section side braces that prevent tailgate spreading.

Heil's heavy-duty rock body for off-the-highway operation. 70° dumping angle for fast, clean discharge.

Heil's platform conversion hoists convert any fixed bed truck into a time-saving dump unit.

1. HEIL Bodies use both cross members and long members of the subframe for support, giving you extra strength and longer life

2. HEIL Hydraulic Hoists are so reliable that you never have to replace a piston due to wear

More days on the job, lower maintenance and repair expense mean *lower hauling costs* with Heil Bodies and Hoists. These money-saving dump units are built to stand up under heavy punishment—to stay on the job and get results. For full information on the money-saving construction of Heil Bodies and Hoists, send in the coupon below, today.

BH-1418

THE HEIL CO.

Factories: Milwaukee — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

THE HEIL CO., Dept. 4379, 3043 W. Montana St., Milwaukee 1, Wis.

Please send me bulletins describing the dependable bodies and hoists shown in this advertisement.

Name.....Title.....

Address.....

City.....( ) State.....

BURN..... *all dry Refuse with* ONE *handling!*

Use the New Westchester Utility & Burning Cart

the PORTABLE INCINERATOR

It's so obvious! ONE man . . . with ONE handling . . . *completely* disposes of dry, burnable refuse quickly, effortlessly . . . ONE MAN collects *paper, leaves, brush, grass cuttings,* etc. . . . drops it into this 40"-high Burning Cart . . . strikes a match . . . in a minute it's gone — no more handling! The ash catcher protects grass. Dead ashes are thrown away or scattered to nourish lawns.

CARTING — 18 cu. ft. Several times wheelbarrow capacity.

BURNING—Welded steel. Built to last—for years!

DUMPING — Perfect balance. All loads easily handled.

SAVES MONEY because it SAVES TIME!

With this incinerator-cart one man does the work of many—in one operation. Cart's 18 cu. ft. capacity saves trips. Perfect balance means bigger, easy-to-handle loads . . . of course, burning-on-the-spot saves loading, trucking, dumping, etc. operations. Result: money saved and a better job done!

SHOW TAXPAYERS YOU'RE ECONOMIZING!

With many Municipal and State budgets tight, now is the time you must economize —and still do the job! The initial cost of these long-lasting Carts will be returned through payroll savings . . . Order now for summer and fall use.

Shipped uncrated, by Railway Express, collect. F.O.B. Yonkers, N.Y. **$69.50** (10% discount in lots of 10)

For detailed description, specifications, write

COUNTY SPECIALTIES

P. O. Box 626, Port Chester, N. Y.

STREET SIGNS

Mak-A-Sign letter-changing stencils are easy to use, fast, efficient, inexpensive to operate. Makes legible street name on curb, sidewalk, wood or concrete posts, or signboards. *Write for Descriptive Folder and Prices.*

Exclusive territories open for SALESMEN or Distributors now doing business with municipalities. Send full details.

MAK-A-SIGN CO.

P. O. Box 2290, Birmingham, Alabama

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PNEUMATICALLY PLACED CONCRETE
DENSE • DURABLE • HIGH STRENGTH

for

Restoring Distintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Lining
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Swimming Pools—Pressure Grouting
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Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 Lexington Ave., N. Y. 17, N. Y. • MUrray Hill 3-7699

MARTIN model 22 TRAILER

ANNOUNCING A VERSATILE NEW TRAILER WITH A CAPACITY OF 5 TO 7 TONS.

EXTREMELY LOW PLATFORM HEIGHT. Rollers, Track tractors, and bulk material easily loaded and transported.

JOB TESTED ENGINEERING. Rugged construction, ample flotation and adequate safety features typify all models of **MARTIN TRAILERS.**

There is a **MARTIN TRAILER** for every hauling job.

At your request let us send you detailed specifications and prices.

MARTIN MACHINE CO. KEWANEE, ILL.

"Stop shivering, Ruth!
I'll have some more water hot in a minute"

Fifty years ago, a tea-kettle provided hot water for the Saturday night bath in many homes. Today, over 12 million automatic gas water heaters are in use and 21 million homes are served by gas for cooking, refrigeration and heating. The extraordinary growth and expanded availability of gas service is a notable contribution to better living in America.

Water supply and sanitation have also made remarkable progress in the half-century since 1899, the year our Company was organized. Today, more than 12,000 water works permit inside plumbing and furnish a dependable supply of safe, potable water, for 85 million people. Over 6,000 sewage treatment plants, now in operation, help protect the health of more than half of our urban population.

For 50 years we have been the largest producer of cast iron pressure pipe and fittings for these public services, so vital to better health and living. We are happy to have contributed to some extent to their progress. As to progress on our account—in manufacturing methods, production standards and quality controls—let our present product speak for itself.

To those responsible for the great progress in water supply, gas and sanitation service and their contribution to better health and living over the past fifty years, America pays tribute.

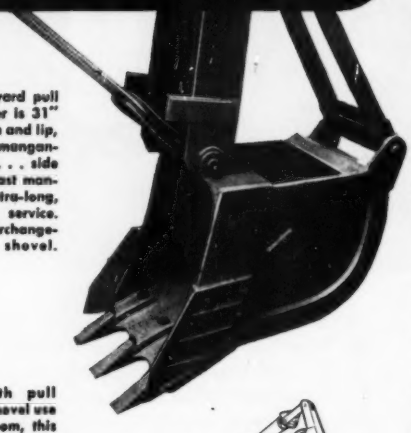
U.S. CAST IRON PIPE

1899-1949
U. S. Pipe & Foundry Co.
Makers for 50 years of cast iron pipe for water, gas and sewerage service.
General Offices: Burlington, N. J.

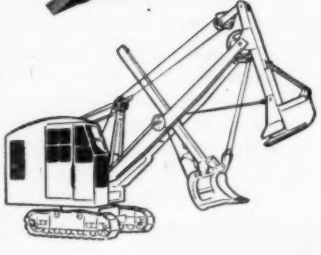
KOEHRING 205

half yard PULL SHOVEL

fast • • • powerful



Husky, half-yard pull shovel dipper is 31" wide. Bottom and lip, one-piece manganese casting . . . side cutters are cast manganese, for extra-long, heavy-duty service. Teeth are interchangeable with shovel.



Because both pull shovel and shovel use the same boom, this Koehring 205 combination costs 25% less than conventional units that require two separate booms.

NO WEAVING with this rigid pull shovel front end

Extra strength, extra resistance to side-sway are built into the Koehring half-yard 205 pull shovel. You get a straight, clean ditch every time because here you have a pull shovel mounted on a rugged, heavy, crowd-shovel boom. Front end will not weave . . . pull shovel dipper doesn't turn away from the cut, because wide, shovel-type boom point gives a wide connection to the rigid pull shovel dipper arm. Its long, deep digging reach (15'3"), powerful half-yard bite, and easy dumping give high output.

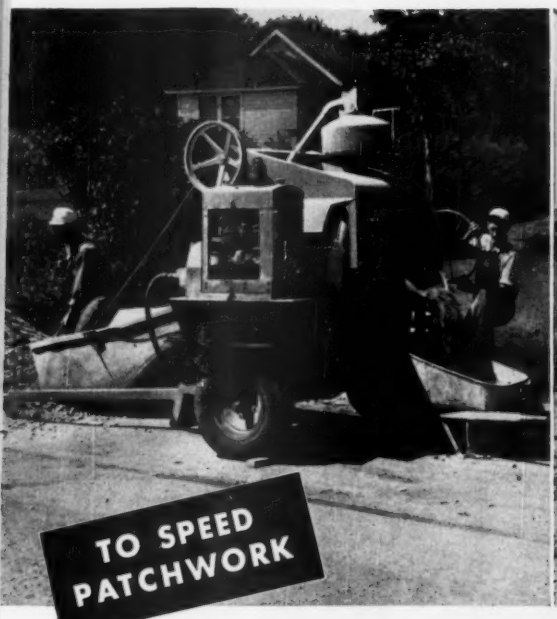
Here are other Koehring 205 features that assure you more production at lower cost: independent traction, to travel, swing and operate boom all at same time . . . double-fulcrum clutch, to reduce manual operating effort . . . dual-purpose boom to handle both pull shovel and crowd shovel. 205 also converts quickly to dragline, clamshell, crane or pile driver . . . is available on crawlers or pneumatic tires, to suit your needs. Other Koehring excavators: ¾-yd. 304, 1½-yd. 605, 2½-yd. 1005. Ask your Koehring distributor about the 205 half-yard today . . . or write for illustrated catalog.

KOEHRING HEAVY-DUTY

KOEHRING COMPANY

MILWAUKEE 10, WISCONSIN

Subsidiaries: JOHNSON · PARSONS · KWIK-MIX



Make repairs with KWIK-MIX 11-S CONCRETE DANDIE*

Here's a time-saver for your street maintenance, sidewalk, driveway, curb repairs and foundations that mixes top-quality concrete at top speed.

You save time every batch . . . mix more batches per hour because new Selective Skip Shaker speeds drum charging. Dandie mixing drum folds as it mixes . . . thoroughly cement-coats each particle . . . re-mixes aggregate 80 times during average 1-minute mixing cycle. Exclusive, wide, Flow-Line Discharge Chute discharges full 12.1 foot batch in only 2 revolutions of the drum . . . approximately 7 seconds!

You'll also like the 11-S Dandie's mobility. It's fast-trailing . . . easy-spotting . . . has low center of gravity, short turning radius. This non-tilter is available with either side or end discharge to suit pouring conditions. Side discharge model mounts on 4-wheels . . . end-discharge on either 2 or 4 smooth-rolling wheels.

Three other sizes in the Kwik-Mix Concrete Dandie line . . . 3½-S, 6-S, and big 16-S . . . offer you a full range of types and sizes. (Write today for illustrated bulletins or see your local distributor.)

...USE PARSONS 250 TRENCHLINER*

With this heavy-duty Model 250 Parsons Trenchliner, you have plenty of flexibility to meet the special problems of city trenching. It efficiently excavates trenches close to trees, poles, curbs, in narrow alleys and other confined areas, because the digging boom shifts to either side of the machine . . . cuts within 12" of side obstructions.

Boom is also telescopic, easily changed for digging depth . . . digs over and under crosspipes . . . saves costly hand trimming. Heavy-duty Model 250 digs up to 12½' deep . . . 16 to 42" wide. Its arc-type conveyor discharges spoil on either side of the machine. All operations are reversible, Trenchliner maneuvers like a crawler tractor . . . turns completely around in its own length.

For complete facts on what this fast-digging, heavy-duty Model 250 Trenchliner can do for you, contact your local Parsons distributor or write to us for bulletin. Same time, ask for catalogs on Parsons two other ladder-type Trenchliners, and the new, versatile utility-size Model 80 Trenchmobile.

*Trademark Reg. U. S. Pat. Off. CK816a

KWIK-MIX COMPANY
KOEHRING SUBSIDIARY · PORT WASHINGTON, WIS.

PARSONS COMPANY
KOEHRING SUBSIDIARY · NEWTON, IOWA

BE READY...

...for the Fall leaf problem

AVOID CLOGGED SEWERS AND SLIPPERY PAVEMENT WITH Good Roads MACHINERY **LEAF COLLECTOR**

If you are ready with a Good Roads Leaf Collector when the leaves begin to fall, you can eliminate the dangerous leaf nuisance efficiently, economically, and quickly.

The two-man-operated Leaf Collector inhales leaves and in the process shreds them into small particles. These chopped leaves are known as "COMPOST," a natural fertilizer which will be begged for by many citizens, for use in their gardens.

This feature is important in cities where there is too great a distance to travel to the dumping site.

FEATURES

FLEXIBLE INTAKE HOSE . . . . . .
easily maneuverable into driveways, under and around autos, in gutters, around corners and catch-basins and under cross-walks.

RUGGED ROTOR BLOWER ASSEMBLY . . .
inhales and pulverizes wet or dry leaves in one operation.

HYDRAULIC SYSTEM . . . . . .
operates independently . . . makes hook-up and dumping almost instantaneous.

SPACIOUS LITTER CARRIER . . . . . .
holds blocks and blocks of pulverized leaves and debris.

SPECIAL FILTERS . . . . . .
keep surrounding air clean and dust-free.

The rubber tired snoot for all purpose leaf collecting (circular illustration) and the simple Hanger Arm unit (top) are standard equipment.

CONTACT YOUR GOOD ROADS DEALER or the factory for further detailed information or a demonstration.

GOOD ROADS MACHINERY CORP. **MINERVA, OHIO**

RAM

Breaking blacktop—for a clamshell to remove—is just one of the many jobs this versatile International Diesel does to speed street repair and re-paving. A year-'round workhorse, this TD-9 more than pays its way in the community.

Land clearing—or any 'dozer work—is a pushover for International Diesel Crawlers. They have the power and stamina to ram jobs through to completion at low cost and in minimum time.

International Power, geared to the ground by earth-grabbing tracks, puts maximum pull or push into the job for efficient earthmoving.

Get these advantages: advanced design fuel combustion, simplified fuel injection, positive all-weather starting, sensitive speed governing with torque control that increases engine torque as much as 15% when the load demands it; and the many other operating and construction features which International diesel crawlers provide.

Their *dependability, superior performance, matchless operating economy* and *low maintenance* spell PROFITS for owners everywhere.

See your International Industrial Power Distributor for tractors that pay dividends on every job they perform.

INTERNATIONAL HARVESTER COMPANY

CHICAGO

Hear James Melton and "Harvest of Stars" every Sunday—NBC

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

M-B MAINTAINER

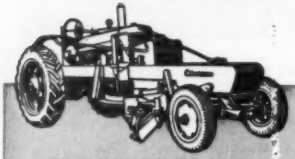
MORE PERFORMANCE—MORE EFFICIENCY—MORE CAPACITY

Your M-B Maintainer is designed to give you a greater variety of services at lowest possible cost. Increased maneuverability enables the machine to perform all types of earth moving and maintenance jobs with speed and efficiency. A mounting plate is provided for special equipment such as power sweepers, snow plows and bulldozers. Meili-Blumberg Corp. is in a position to furnish this type of equipment. The M-B Model 30 Maintainer is powered by a sturdy 31 H.P. International engine. The operator has full vision and finger tip control of maintainer and attachments. Balanced construction assures maximum blade pressure at all five operating speeds.

Write for Bulletin No. 140 for additional information.

MANY USES!

- Road Maintenance
- Grading and Ditching
- Reshaping Surfaces
- Scarifying Hard Surfaces
- Sweeping Streets
- Snow Removal



M-B POWER GRADER

Designed for all types of grading and filling jobs. Hydraulic controls make it easy to operate. Used by state highway departments, counties, cities and industrial plants. Low operating and maintenance costs.

M-B MARKERS

Ideal for striping streets, parking areas, airports, playgrounds, industrial plants, etc. Rugged, compact construction. Hand or self-propelled models. M-B Markers are versatile to operate . . . have a large capacity . . . provide fast, low-cost striping.

M-B TRAILERS

Sturdily constructed with all-steel welded frames and Tilt-Bed platforms for easy loading. Designed for hauling various types of tractors with attachments, rollers, tampers, shovels, graders, ditchers, air compressors, etc. Sizes 2½ to 10 tons.

M-B MAINTAINER

Lightweight Maintainer engineered for heavy duty maintenance work. For contractors, towns, cities and highway departments. Attachments such as cab, scarifier, power sweeper, snow plow, bulldozer blade, and loaning wheels, available.

MEILI-BLUMBERG Corp.

A 5352-1P-C

WHAT WILL CALCIUM CHLORIDE DO FOR GOOD CONCRETE?

Here are the Facts

Here's a brand new, 40-page semi-technical book which clearly presents the facts on the use of Calcium Chloride. Filled with graphs, tables and charts and developed through research conducted by nationally recognized authorities, the book contains much material not heretofore available. This information is of interest to contractors, architects, engineers, plant operators and men in the allied fields.

For example . . . DO YOU KNOW—

- What Calcium Chloride will do for cool and cold weather concreting?
- What happens when Calcium Chloride is added to air entrained cement? . . . high early cement? . . . low heat cement? . . . colored cement?
- The effect of Calcium Chloride on slump? . . . flow? . . . workability? . . . density? . . . water-cement ratio?
- The effect on setting time? . . . early strength? . . . ultimate strength?
- How much Calcium Chloride will reduce the curing period?
- The effect on volume change . . . surface wear?

These are just a few of the questions answered in this new book. "The Effects of Calcium Chloride on Portland Cement" is just off the press. Write for your copy today—there is no obligation.

SOLVAY
Calcium Chloride

SOLVAY SALES DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

Please send my free copy of the new, 40-page book "The Effects of Calcium Chloride on Portland Cement." Please check:

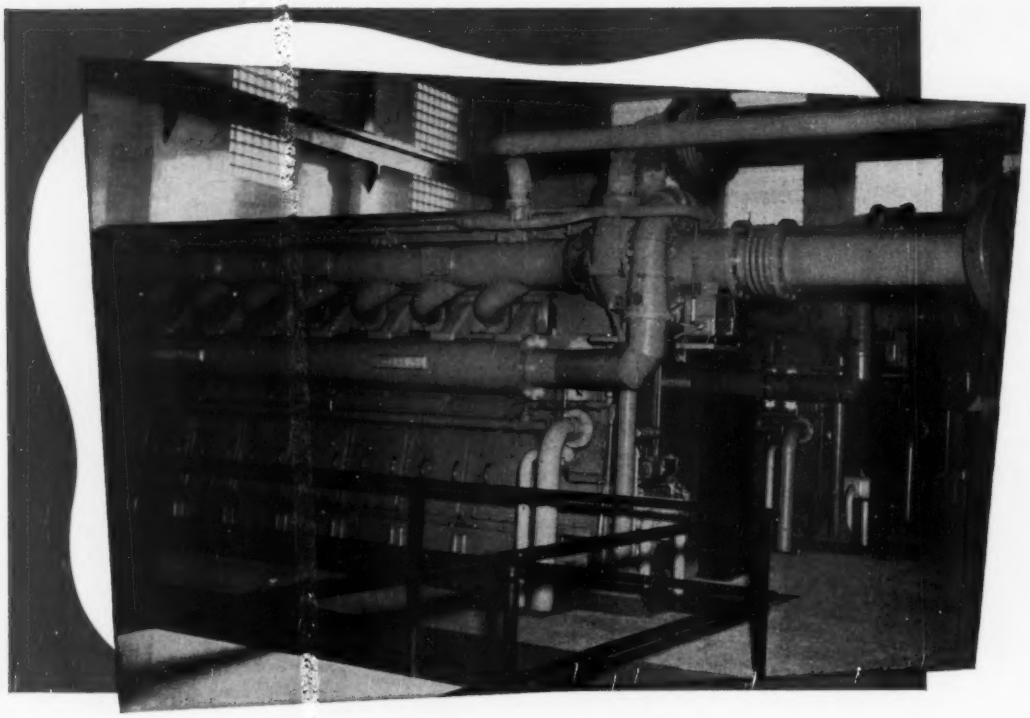
( ) Contractor ( ) Architect ( ) Plant Operator ( ) Engineer

Name .....

Company .....

Address .....

City ..... State 61-7



This is the way a dream came true

For 50 years officials of a Michigan town planned and worked to secure an adequate source of electrical power.

Over the years they gradually acquired property and rights for extracting power from the river that ran through the town. Finally it became apparent that there wasn't enough water to produce all the electrical power needed by a fast-growing community.

But they made their dream come true by building a generating plant powered by three 1440 hp, supercharged Superior Diesels, driving generators capable of delivering a total of 3000 kw. Now they have a source of power that will serve them today and for many, many years in the future as well.

If you are interested in securing an adequate and dependable source of power, investigate the advantages Superior Diesels have to offer. They have proved their value over and over again when used for water supply systems, sewage disposal plants, airport lighting and many other vital services.

Superior Diesels are made in supercharged and non-supercharged models that range from 170 to 1500 horsepower. One of our field engineers will be glad to discuss the advantages of these engines with you.

THE NATIONAL SUPPLY COMPANY
SUPERIOR ENGINE DIVISION
Plant and General Sales Office: Springfield, Ohio

THE NATIONAL NSCO SUPPLY COMPANY

Superior DIESEL

Double-Duty PERFORMANCE
FOR APPLIANCE DEALERS

THE STANDARD OF THE UTILITY INDUSTRY

American D·P·L Gas
LINE CONSTRUCTION BODY

American makes the DPL and DT Line Construction Body in four basic lengths . . . to take care of different requirements. And it explains why American will engineer standard bodies for special utility requirements . . . also why American offers a choice of more than 60 optional equipment items.

American's Light Utility Body will save you money on transportation equipment. When the 4460 leaves your headquarters it is fully stocked to service an area with both merchandise deliveries and on-the-job repairs . . . no need for an equipped service car, plus a delivery truck . . . *the 4460 does double-duty for you.* You can use every inch of the bed for merchandise. Three body lengths are available—75″, 90″, 104″ for use on 1/2, 3/4, 1, and 1-1/2 ton chassis. Generous side compartments, efficiently equipped with shelves and drawers provide adequate supply and tool space.

Flexible Arrangement for Your Business

Each side box has a vertical compartment at the front and a single horizontal compartment above the wheel housing. The vertical compartments are equipped with removable and adjustable shelves.

THE *American* COACH & BODY COMPANY

MAIN OFFICE AND PLANT — 9503 WOODLAND AVE., CLEVELAND 4, OHIO
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SALES OFFICES: INSURANCE EXCHANGE BLDG., DES MOINES 9, IA. · 207 LAKE STREET, MONROE, N. Y. · HEALEY BLDG., ATLANTA, GA.

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ACB and

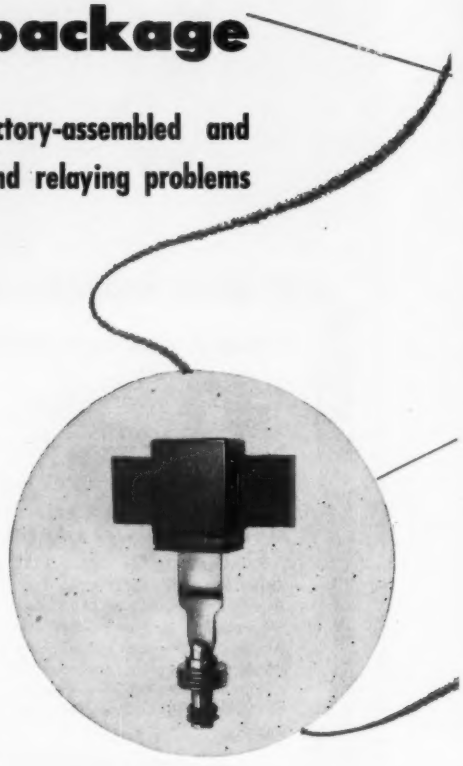
all these devices

co-ordinated

in one functional package

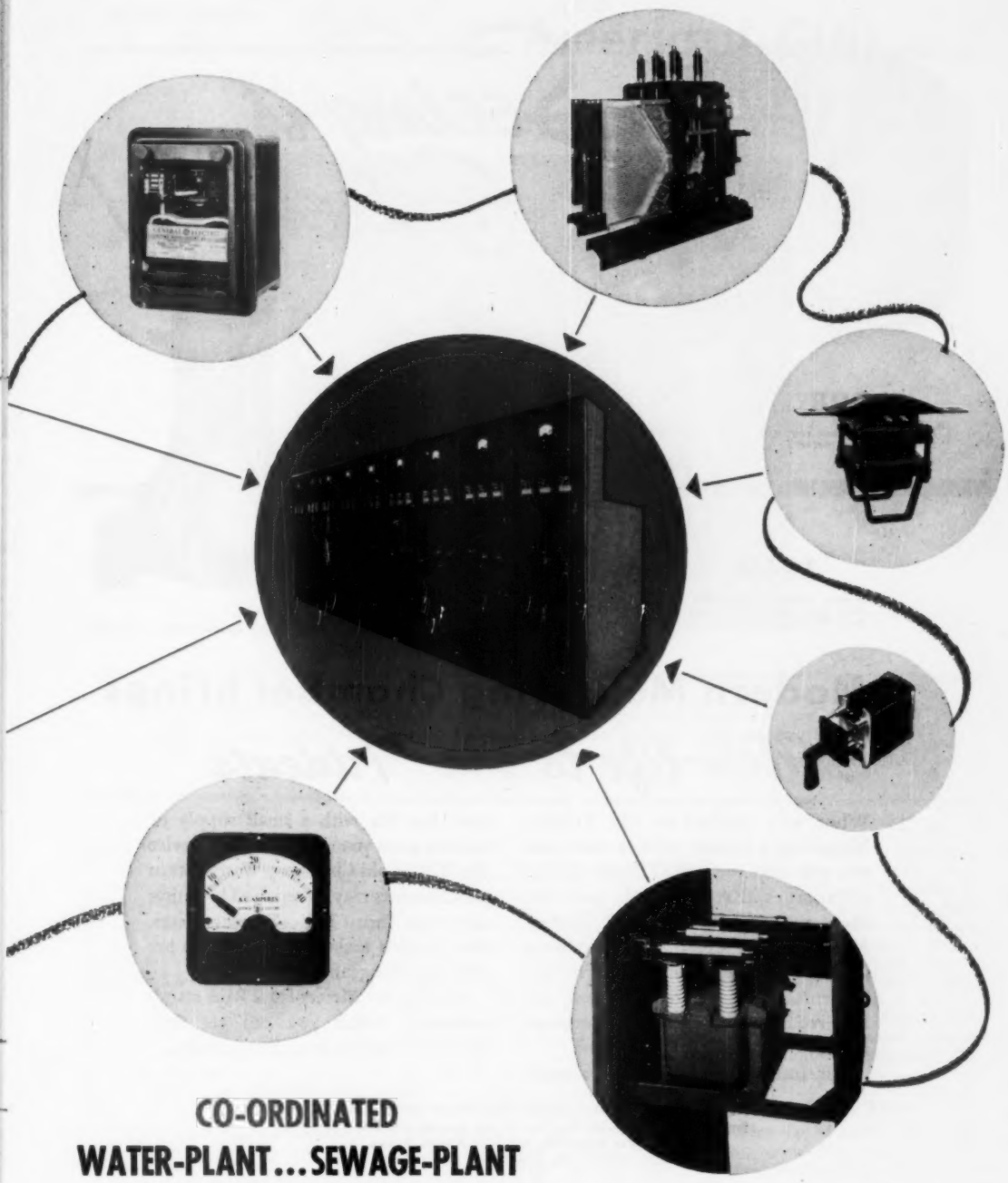
G-E metal-enclosed switchgear designed, factory-assembled and tested to solve all your protection, metering and relaying problems

A simple, one-line diagram is all the information our water and sewage engineers need to go to work on your power-distribution problem in new or expanding plants. From this diagram they can help you plan your distribution system and the necessary switchgear control and protective equipments to provide efficient flow of power to your load areas. These equipments will include circuit breakers of adequate interrupting capacity, relay protection, instrumentation and other associated devices, assembled and interconnected within streamline metal enclosures.



More Information?

Your consulting engineer or General Electric representative will tell you more about these equipments and help you plan your entire electrical layout. Consult him early, so that you can profit by co-ordinated planning and thereby simplify engineering, construction and installation. *Apparatus Dept., General Electric Company, Schenectady, N. Y.*



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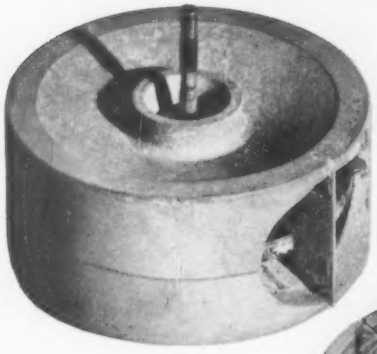
WATER-PLANT...SEWAGE-PLANT
ELECTRIFICATION

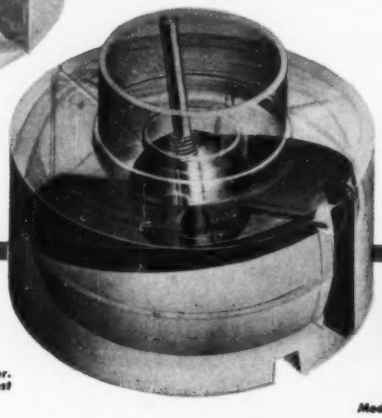
GENERAL ELECTRIC



Seeing is Believing!

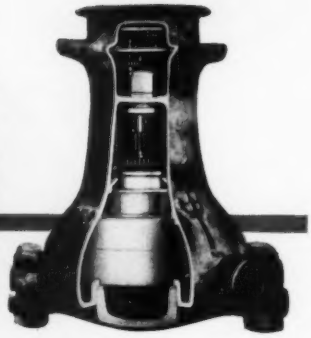
1898

Measuring Chamber removed from old Trident Meter



1949

Modern Measuring Chamber. Note Sand Ring and Thrust Roller Bearing Plate



Modern parts fit this old Trident Meter perfectly

A Modern Measuring Chamber brings *New life to Old Tridents*

When you replace an old Trident Measuring Chamber with a new one, you put into your OLD meter all the advantages that are built into the Measuring Chamber of NEW Trident Meters. For the replacement Chamber is identical with the Chamber used in new Tridents. Thus the test of your old repaired meter will approach new meter accuracy.

But interchangeability means more than this. For with a small supply of modern parts you can extend the service life of most old Chambers. Worn slots in old Chambers may be repaired by fitting them with Thrust Roller Bearing Plates. Disc pistons and component parts are also interchangeable.

Buy Trident Meters for TRUE standardization, which you can get only through complete interchangeability.

NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK 20, N. Y.
Branch Offices in Chicago, San Francisco, Los Angeles, Portland, Ore., Denver, Dallas, Kansas City, Louisville, Atlanta, Boston.
NEPTUNE METERS, LTD., Long Branch, Ont., Canada

Trident Interchangeability means **TRUE** *standardization*

204

An aerial photograph from the Cleveland survey, taken from an altitude of more than half a mile with a Brock precision aerial camera.

Photographic maps produced at a great saving of time and cost, together with the aerial photographs, have proved invaluable for the orderly study of the location of freeways, parks, playgrounds, hospitals, building developments, and traffic relief.

By G. BROOKS EARNEST
Professor of Engineering Surveying
Case Institute of Technology
Cleveland, Ohio

WE ARE now in an era in which most American cities have outgrown their mapping britches. The continuing expansion of industry and the rapid growth of residential construction have caused most cities to overflow into new areas. There is an urgent need for current map information to plan new streets, playgrounds, shopping centers, storm sewers, and many other civic and utility necessities in these new surburban areas. Up-to-date maps are likewise needed to plan for the rehabilitation of existing slum areas.

But in many communities, mapping information is woefully out-of-date. For years, city engineers and city-planning commissioners have been crying for new mapping or the modernization of existing maps, and especially the mapping of the fringe areas where the new growth is greatest and where new maps are most essential for proper planning. Ordinarily budgets are low, and the cost of collecting map information by ground-survey techniques is very high.

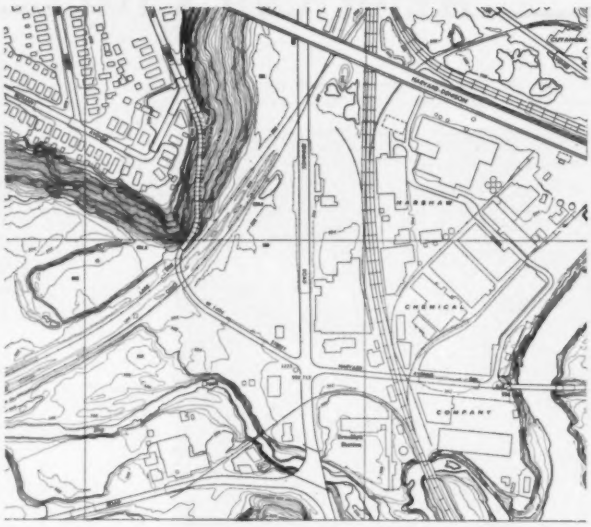
In the majority of cities, the engineering staffs are undermanned. The day-to-day work schedule consumes all existing man-hours. There is simply no time available to tackle the needed city-mapping job, even on a piecemeal basis.

Perhaps, as a result of obsolete and inadequate mapping, we find ourselves in a renaissance respective to topographic mapping. Today aerial mapping offers American cities a speedy and economical answer to their mapping needs. Developments in the field of photogrammetry during the past decade make it possible now to provide aerial topographic maps of rigid engineering accuracy at a fraction of the time and cost of 100% ground-survey methods.

Typical of the time and money saved through aerial mapping is the experience of metropolitan Cleveland. Large-scale topographic maps were needed in a hurry. Prevailing plane-tabling methods were too slow, and likewise proved too expensive. At the existing rate, it would have taken about 150 years to map Cuyahoga County, in which Cleveland is located, an area of approximately 450 square miles. Costs for the plane-table mapping already accomplished amounted to approximately $7,500 per square mile.

Fifty Times Faster

Investigation of aerial mapping's utility promised important savings. It was found that Cuyahoga County could be mapped with aerial-mapping methods in *one-fiftieth the time and at less than half the cost* of the existing ground-mapping methods! The successful bidder for the contract was the Aero Service Corporation of Philadelphia. The first eight map sheets in this large mapping program, covering



A typical section of one of the Cleveland map sheets.

approximately six square miles of metropolitan Cleveland, were delivered early in January. Cost was in the neighborhood of $3,500 per square mile. These maps cover a high priority area for immediate development-planning of a specific freeway. The entire county will be photographed from the air on glass-plate negatives and a continuity of topographic mapping programs is projected.

"What sort of maps has Cleveland bought — what is their accuracy —what were the specifications and were they met?" many city engineers and planners have asked. These topographic maps have been compiled at a contour interval of 2 feet, with a horizontal scale of 1 inch to 200 feet. They have been published in four colors by lithographic processes, each map sheet covering an area 4,000 feet in the north-south direction by 5,000 feet in the east-west direction. The Cleveland specifications required that 90% of all contours be correct within one-half contour interval and none of the remaining 10% over one contour interval. A check of the eight delivered map sheets showed 95.4% of all contours correct within one-half interval, as computed on 26.29 miles of test profiles in the field by the Cleveland Regional Geodetic Survey. In addition to contours, the maps' planimetry and drainage shows all streets, railroads, buildings, churches, schools, industrial sites, power lines, and other works of man, as well as woods, streams, and water bodies. All planimetry checks fell within specifications.

Glass-plate negatives were specified for this work because it was anticipated that it may take several years to obtain the necessary sponsorship to map the major portion of the county. It was assumed that the emulsion anchored to the glass plate would hold its scale better over a longer period of time. A single 6- by 8-inch glass-plate negative, with a photographic scale of one inch to 400 feet, covers an area of approximately 175 acres; accordingly, fractional distortions caused by non-uniformity of film emulsion or non-flatness can be significant in obtaining precise maps by use of aerial photos.

This first big metropolitan aerial mapping project was jointly sponsored by the Ohio Department of Highways, the County of Cuyahoga, and the City of Cleveland. The work was executed under the direction of the Cleveland Regional Geodetic Survey, aided by civil-engineering students of the Case Institute of Technology during their summer session.

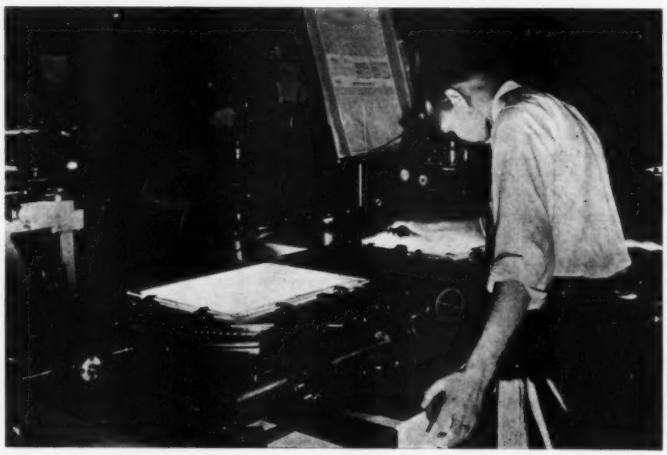
Usefulness in Smaller Communities

While this project affords an excellent yardstick to gauge photogrammetry's utility in city mapping, aerial mapping's usefulness is not limited to metropolitan areas. Many smaller communities are finding it their best answer to the urgent need for current, accurate map facts.

Aerial mapping's costs vary according to the size of the area to be mapped — airport facilities — and the type of maps to be delivered. Cleveland, for example, required four-color lithographed map sheets for its program. In smaller cities, inked tracing-cloth map sheets may be adequate.

Who Uses the Maps?

How are those city maps used? They are of great value to city and county planning and engineering offices. Planning commissions use them for planning new sub-division layouts, planning a thoroughfare system, for locating recreation sites, and sites for hospitals,



Contours are traced on the Brock Stereometer, a highly precise photogrammetric instrument used in preparation of the Cleveland maps and similar work.

housing projects, parks, parking facilities, and public buildings. They are used, too, for redevelopment studies, for traffic-flow distribution, for intersection analyses, for studies to improve industrial land use and material storage, and for city-planning conferences, publicity, and reports.

Many of these uses hold true for the city engineer's office also. In addition, city engineers use aerial topographic maps for the design and location of highways, streets, bridges, sewers, sewage-disposal plants, and flood-control and drainage structures.

The post-war emphasis placed upon city streets' being the bottlenecks to through traffic prompted congressional action in 1944 in respect to increased federal contributions toward construction of freeways, especially within urban areas. The first Cleveland aerial mapping was specifically obtained for the planning and preliminary material and cost estimating for one of the projected freeways.

In recent years, aerial mapping has greatly speeded rural highway planning and construction in many states. One outstanding example is the extension of the Pennsylvania Turnpike. Aerial mapping has also speeded the planning and engineering of many industrial developments. Today, American cities are finding that this precision mapping tool can deliver—rapidly and at a price they can afford—the map facts they need for sound city planning and projected growth.

When By-Passes Do Not By-Pass And Highway Access Is Not Controlled

THE fallacy of the theory that by-passes would relieve traffic congestion in large cities and the validity of that theory for small cities was set forth in a paper presented at the American Planning and Civic Association's National Citizens' Conference on Community Planning, held in Oklahoma City on March 30, by Joseph Barnett, Chief of the Urban Roads Division in the Public Roads Administration.

Data resulting from analyses of traffic conditions in many cities by the Public Roads Administration show:

that the bulk of the traffic approaching the larger cities is destined for points within the city itself and, for that reason, cannot be by-passed. Commonly, less than 10 per cent of the traffic approaching cities of more than 300,000 population is destined for points beyond the urban area. By-passable traffic is about 20 per cent in cities with populations of from 10,000 to 300,000, and only in communities of 2,500 or less does the by-passable traffic normally reach 50 per cent of the total traffic approaching the city.

By-passes of smaller cities are useful, particularly if these cities are not too distent from larger cities [said Mr. Barnett], but in the large cities most of the traffic has origin and destination in the cities themselves and relief of traffic congestion can come about only by a broad attack, an important element of which is the development and improvement of routes through the cities. These routes need not be located directly through the central business districts. Right-of-way costs would be excessive and a central business district is and should remain a compact commercial neighborhood. The routes, however, should be located as close to them as possible to attract and drain off the 40 to 50 per cent of traffic, the destination of which is not in the central business district but beyond it.

In acquiring land for arterial-route improvements it is inconceivable to me that we can long continue the past practice of doing so without providing adequate protection for the highway. A road without protection attracts roadside businesses which detract from the appearance of the roadsides and, with their competing efforts to attract attention, form the disgraceful-looking approaches to most of our cities. Of far more importance is their depressing effect on traffic, in that they decrease capacity and increase hazard. As traffic increases in volume and it becomes necessary to widen the road, the very roadside businesses which contributed to the necessity for widening prevent it because of the costly improvements which would have to be sacrificed. A new location then becomes the only alternative; costly to the public and costly to business, which then is forced to compete with competing businesses on the new road. The succession of events has been repeated so often that the pattern is quite clear. . . .

The protection of an arterial highway and the avoidance of obsolescence are best accomplished by authority to control access. With adequate authority both as to controlling ingress and egress and as to controlling the roadside development, considerable economy can be effected in that the required width is less than when such authority is lacking. In addition, the entire width for the ultimate development need not be acquired initially. . . .

Controlled-access highways are now sanctioned by legislative act in 26 states, by constitutional provision in one state, Missouri, and by judicial decision in one state, Minnesota. In 18 of these states, the statute specifically identifies controlled-access highways with state highways. The legislation in 16 states to varying degree authorizes agreements between state highway departments and municipalities regarding controlled-access highways and the consent of the city is frequently required. In some states, legislative authority with respect to controlled-access highways is limited to designated cities of a stipulated population. . . .

With adequate access control, an orderly, permanent development of a highway transportation system in urban areas is possible. But it can come about only through the whole-hearted cooperation of the state highway departments, the counties, and the communities themselves.

The Battle for Municipal Home Rule Must Go On

A STRONG plea for more home rule for Washington municipalities was voiced by Mayor William F. Devin, of Seattle, President of the Association of Washington Cities, at its annual meeting in Hoquiam, June 10.

"I recognize (said Mayor Devin) that the state government must function consistently and as a unit, and I also realize the inadvisability of permitting the cities and towns of the state to become independent kingdoms of their own. But what I cannot understand is why the people of any city should not be permitted to govern themselves and experiment as they choose with plans or projects consistent with our form of government, when such action will not affect other cities or towns but only themselves."

Citing examples of usurpation by the State Legislature of powers which in his opinion ought to inhere in the cities, Mayor Devin emphasized the Legislature's refusal to pass an urban-redevelopment bill which would have permitted cities and counties to clear slum areas and rehabilitate blighted areas within their borders. Here, again, he pointed out, the cities were simply asking for enabling legislation to permit them, if they chose, to take care of their own local slum-clearance or blighted-area problem — a problem recognized by the President of the United States and now the subject of a new law being enacted by the National Congress. Yet the Washington Legislature said, in effect, "No, we will not permit you to clear your slums, nor rehabilitate your blighted areas, even though your people want it."

Essential Features Of a Model Retirement System

PUBLIC-EMPLOYEE retirement systems have both administrative and humanitarian objectives. Therefore, the problem involves the interests and welfare of the municipal employees, the employing body, and the taxpayers. A sound system of retirement is one which serves equitably and efficiently all three interested groups, instead of serving the interests of one group at the expense of one or both of the others. In order to accomplish the desired objectives, a municipal retirement plan should include all or most of the features outlined in this article.

By JAMES H. THOMPSON, Ph.D.
Assistant Professor of Economics and Business, West Virginia University Morgantown, W. Va.

RETIREMENT benefits provide municipal employees with a measure of security against the hazards of a penniless old age and the threat of pauperism due to disability. A sound retirement system also furnishes the city administration with an effective device for increasing administrative efficiency. It makes possible the automatic elimination of those employees who have lost their efficiency by reason of old age or disability, and also produces such additional advantages as the improvement of worker morale and the attraction of a better grade of personnel to the municipal service. To the extent that administrative efficiency is improved, the taxpayer stands to benefit from the resultant savings in the cost of government.

However, a conservative estimate is that fully half of our municipal retirement plans still fail to achieve their potential usefulness, largely because they do not meet certain essential requirements of the model retirement system. For one thing, a substantial proportion of the municipal systems have not yet been placed on an actuarially sound financial footing. The costly and dangerous "cash-disbursement" method of meeting pension fund obligations from current collections is still widely used. Other common defects are charging all members the same contribution rate, failing to include all eligible employees in a single system and neglecting to specify an age when retirement becomes compulsory. Finally, the benefits provided are inadequate in some instances, while in other cases the benefits are overly generous in relation to the income of the system. As they exist today, many of our municipal retirement plans not only fail to increase administrative efficiency, but provide employees with whatever benefits they receive only at an unnecessarily high expense to the taxpayer.

Within the last decade, there has been a very encouraging growth in the number of efficient and socially adequate retirement systems for municipal employees. This is particularly true of the general systems which have been developed on a state-wide basis. Most of these state-administered systems conform fairly well to the basic principles of a progressive retirement program.

Five Time-Tested Features

The time-tested features of a sound retirement plan may be grouped under five general headings: participation, contributions, financial structure, administration, and benefits.

Participation. — Compulsory participation should be required by the model plan in order to insure broad coverage and administrative efficiency. Moreover, it is desirable that all eligible members of a municipal civil service, including firemen and policemen, be included in a single retirement system. However, certain classes of municipal employees should be ineligible for membership in the system. Elected officials and their administrative appointees, as well as wage-earners hired on a weekly or hourly basis, are not suitable for membership, chiefly because their tenure of office is usually too short to permit their sharing in the benefits of the fund.

In accordance with the principle of broad participation, state-wide consolidation of municipal retirement systems should be brought about wherever possible. There has been a rapid growth in the consolidation of municipal systems since 1940, so that general systems of this type are now in existence in 28 states. However, participation in such plans is usually optional on the part of the municipalities. It appears imperative that all of the municipal systems within a state be consolidated into a single, integrated system if uniformly high standards are to be achieved and maintained.

Contributions — The model system should be jointly contributory, with the municipal government and employees contributing about equally toward future liabilities. Beyond this, the government should bear the cost of administrative expenses and accrued liabilities, and the cost of benefits where disability or death was service-incurred. If we are to accept the principle that there is a mutuality of interest between employer and employee in the establishment and administration of pension funds, it seems reasonable that the costs of retirement plans should be shared jointly by the two groups. As city employees are scarcely well-paid, it is impracticable for them to pay the entire cost of an employee-retirement plan. Furthermore, the advantages accruing to a municipal government from a sound retirement program are at least equal to those accruing to participating employees. Therefore, it seems logical that a portion of the cost of such a program should be borne by the municipality. It may be argued with equal validity that employees benefit from a retirement system and should contribute to the upkeep of the system. Aside

from this, non-contributory pensions have shown that they are exceedingly costly, do not promote the efficiency and well-being of employees, and provide uncertain and contingent benefits.

The rates of contribution of employees should be determined by actuarial study, and, therefore, may differ among employees according to differences in age, sex, and occupation. Uniform "flat rate" contributions not only fail to insure financial security, but are inequitable to the employee. Modern actuarial practice recognizes that, during a stated period of time, the cost of protecting individuals against the risks of old age and disability may be much greater for one employee than another. Contributions should be refunded, preferably with interest, when an employee is separated from the service by reason of withdrawal or death.

Financial Structure.—Classified according to types of financial structure, retirement plans are of either the cash-disbursement type or the actuarial-reserve-fund type. Under the cash-disbursement type of retirement plan, current collections are used to pay current obligations. Under the actuarial-reserve-fund type of retirement plan, on the other hand, contributions are funded and the accumulated reserves standing to the credit of the retiring individual determine the benefits allotted to him.

The principal advantage of the cash-disbursement plan is simplicity in operation. No large fund is created with the attendant possibility of mismanagement, and no complicated actuarial computations and valuations are needed. However, the disadvantages of this type of financing far outweigh the advantages. Lewis Merriam listed four significant objections to the cash-disbursement plan: *

1. It is unbusinesslike and conducive to extravagance.
2. It requires constantly larger appropriations which are subject to attack in times of economic pressure.
3. It is inequitable because the generation which establishes the fund escapes almost all financial responsibility while succeeding generations must bear a constantly increasing burden.
4. It is not readily adaptable to give employees fair benefits in the event of death in active service, voluntary resignation or dismissal.

Well-informed students of public administration are in virtually unanimous agreement that the financial structure of the model retirement system should be established upon an actuarial-reserve-fund basis. Actuarial assistance should be obtained at the time of the establishment of the fund and at regular intervals thereafter. A committee of the National Municipal League summarized the advantages of the actuarial-reserve fund in this manner: †

1. It is in accord with the policy of "pay as you go."
2. It is in accord with the conception of a retirement provision as a charge for depreciation of the employees' forces.
3. The cost of the benefits provided is definitely known.
4. The retirement fund is maintained in a solvent condition.
5. The annual cost is reduced by interest earned.

Administration.—The model municipal retirement system should be administered by an executive director, appointed by and responsible to a governing board. The governing board should formulate administrative policies for the system. Membership of this board should be divided on an equitable basis between elected representatives of the employees and appointed representatives of the municipal government. Among the important duties of the governing board should be the investment of funds, supervision of accounting and auditing procedures, maintenance of records and reports, and quasi-judicial functions in connection with the granting, increasing, decreasing, or suspension of pensions. The investment of funds should be restricted to relatively safe governmental obligations, preventing investment in securities of a speculative nature. Accounting procedures should be standardized and audits provided at regular intervals. An accurate and comprehensive set of records and reports should be maintained. Misinterpretations of the retirement act may largely be avoided if the act is drafted in sufficiently detailed, clearly defined terms, and if conflicting opinions are referred to a legal advisor for settlement. Provisions should also be made for actuarial assistance in the administration of the plan, and for supervision of the system by the state department of banking or insurance.

Benefits.—While it is desirable to provide retirement benefits designed to attract personnel of high caliber into the municipal civil service, it is essential that the type and extent of benefit provisions be determined primarily by the revenue-producing ability of the retirement system. Depending upon the revenues of the system, benefits may include some or all of the following: (1) service requirements, (2) retirements for ordinary or service-incurred disabilities, (3) death benefits resulting from ordinary or service-incurred deaths, (4) temporary disability or sickness benefits.

Service retirements should be based either on age alone or a combination of age and service requirements. Sixty years should be the minimum age for voluntary service retirement, with retirement compulsory at 65 to 70 years. It is desirable that completion of a substantial period of service be a prerequisite for ordinary disability retirement, but there should be no service requirements governing eligibility for retirement or death benefits resulting from line-of-duty injuries or deaths. A desirable, although not entirely necessary, feature found in some actuarial-reserve funds is the provision of several optional methods for the payment of benefits.

* Leonard D. White, *Introduction to the Study of Public Administration* (New York: The Macmillan Company, 1942), p. 408.

† William B. Mosher and J. Donald Kingsley, *Public Personnel Administration* (New York and London: Harper & Bros., 1941), p. 515.

More Cities Adopt Retirement Plans

RETIREMENT systems are in effect for municipal employees in 981 American cities, according to the International City Managers' Association. The Association reported that in the past five years the number of cities covering all their employees has almost doubled in growing from 341 to 649. During the same period, the number of cities belonging to state-administered plans increased from 250 to 418.

A survey of cities with a population over 10,000 for the 1949 *Municipal Year Book* indicates that 91% of these cities provide retirement systems for some or all of their non-school employees. In 649 of the cities surveyed all of the non-school employees are covered by the system. In 202 other cities retirement plans are in effect for policemen and firemen but not other groups, while 119 cities reported retire-tirement systems for either policemen or firemen but not for both groups. Retirement plans for groups of other employees were noted by 11 cities.

Ninety-seven per cent of the cities with no retirement plan of any kind have a population between 10,000 and 25,000. Only three cities above 25,000 have failed to establish a retirement program for at least part of their employees.

The survey revealed a marked shift away from plans for special groups such as policemen or firemen, and a trend towards general plans applying to all city employees.

State Retirement Systems Grow

State-administered retirement systems for non-school municipal employees are now in effect in 28 states. In 1944, only 14 states had plans for these employees. Two additional states provide coverage only for fire employees, while one state provides coverage for police employees only. No municipalities had participated in the retirement plans of Nevada, Pennsylvania, Florida, and Tennessee by the end of 1948, and in nine other states officials reported that no cities over 10,000 joined the plan during the year.

How Beaumont, Texas, Reclaimed Its Streets

By JESS THOMSON
Trotti & Thomson, Inc.
Beaumont, Texas

FOR 20 years the streets of Beaumont, Texas (population estimated at 100,000), had been slowly deteriorating. Gulf-coast rains, the dry heat of drouth, the persistence of a growing traffic load had left their marks. Fifty miles of the city's principal streets were gradually crumbling away.

This is an example of a Beaumont street before rehabilitation.

Today, Beaumont has a new, smooth, long-lasting web of skid-proof, asphaltic concrete streets.

And, because of sound engineering, Beaumont has built a new street system at a mere fraction of the $5,000,000 that many had felt would be necessary.

City Engineer Clyde Black's problem was either to salvage city streets or tear them up and begin anew. The program he adopted was to repair the obvious base failures in the existing 50 miles of paved street, and spread a layer of hot asphaltic concrete over everything. If base failures developed, he planned to repair them and put down a final layer of asphalt.

Accepted paving practices called for 2 inches of hot mix; but in Beaumont, the average thickness is only an inch. More than half of the work will not require the second layer that had been planned in the beginning.

Volumetric changes in the sub-grade was determined to be the reason Beaumont's streets had steadily deteriorated. Of course, the trouble was emphasized with increasingly heavy traffic.

Downtown streets originally were composed of brick surfacing, a 2-inch sand cushion and 4 inches of lean concrete, unreinforced. This rested upon the clay sub-soil. To this had been added, in 1923, a new 1-inch hot-laid rock-asphalt surface.

In the residential areas, paving consisted of a 1-inch cold mix atop a 5-inch unreinforced concrete base.

The breakdown produced cracks in the pavement. And this meant that the surface no longer was sealed. The moisture content in the subgrade became unstable. There was a continual wetting and drying, expansion and contraction, heaving and falling.

Hot asphaltic concrete's permanent sealing action, plus flexibility and stability, proved to be the remedy.

Observation of the finished work has shown that if base failures do not appear within 30 days after traffic has been turned onto the streets, there likely will be no base failures.

Consulting Engineers McCormick and Teller of Houston, Texas, were no less surprised at the results than others. Wrote McCormick and Teller to the contractors:

"Confession is made to having felt some concern at the beginning of this work because a more thorough investigation and more extensive repairs were not made prior to the placement of resurfacing.

"And present indications are that this policy is economically sound in that a comprehensive repair program would have been rather costly, and the resurfacing is giving every indication of holding up perfectly over much of the old pavement which without any doubt would have been torn out and replaced if complete rectification of the old pavement had been undertaken. It is now believed that the procedure of making only minimum and obviously needed repairs ahead of resurfacing is essentially sound."

In later comment, McCormick and Teller had this to say: "This year's unusual drouth has stressed severely all of the rigid-type bases and pavements in this section of the country, and this has brought about an unusually great amount of 'dry-weather cracking,' which is another way of saying 'soil movement.' In this connection, comparison of the resurfaced streets with the streets yet to be covered seems to indicate that the resurfaced sections have suffered far less cracking and distortion."

Beaumont's broad Washington Boulevard is an outstanding example. The boulevard is 57 feet wide, the city's broadest thoroughfare. Until the rebuilding program, a landscaped esplanade separated opposite-flowing lanes of traffic.

A county road program called for removal of the esplanade. Deterioration of old paving demanded that the city do something to salvage the rest of the boulevard.

A special four-course treatment was prescribed by Engineer Black. First the dangerous holes were patched with hot mix. Then with a maintainer and pneumatic rollers the street's edges were leveled. As a third course the street was reshaped, again with maintainers and nine-tired pneumatic rollers. The final step was surface coating by the usual method of spreader and flat-wheel rollers.

As completed, Washington Boulevard

Base repair where needed, with hot-mix wearing surface, reclaims the streets at a fraction of the estimated cost

is covered with three inches of hot asphaltic concrete and should prove to be what Mayor Otho Plummer says: "One of the outstanding hot-mix paving jobs in the entire South."

The mix used under the resurfacing program was composed of 58% crushed limestone, all passing the ½-inch sieve and retained on the 40-mesh sieve; 37% local sand selected from proper gradation, and approximately 5% OA-55 asphalt. The addition of mineral filler or "dust" was not necessary since the local sand contained some material passing the 200-mesh sieve, and considerable dust was brought in with the crushed limestone.

Although hot mix generally has certain non-skid qualities, this particular mix has been exceptional in that the sand and asphalt have worn away, exposing the crushed stone, thereby making the pavement more non-skid than usual as well as presenting a pleasing, uniform appearance, similar to terrazzo.

At no time did the resurfacing tie up more than two city blocks. Asphalt was laid by day, it accepted traffic that night.

To insure the future of the program, the City of Beaumont and the contractors took painstaking measures of guarantee. The city commissioned Southwestern Laboratories of Houston to control the mix.

The city demanded a "hveeme" of 45%. (Hveeme is a test of durability.) The State Highway Department's "hveeme" demand is only 35%. But, the city reasoned that the starts and stops of city traffic required greater durability than highway construction.

Southwestern Laboratories showed the Trotti and Thomson mix exceeded the requirement, averaging between 51 and 53% throughout the contract.

It wasn't always just a thin coat of hot mix the city used. There were conditions on some of the streets where as much as 8 inches were applied before surfaces were brought to grade.

Beaumont had no great difficulty getting the asphalt, because the city lies in the midst of a great oil-producing center.

From the Texas Company at Port Neches, Trotti and Thomson procured Texas OA-55 asphalt. It was brought to the Beaumont plant by tank-truck loads.

Into the manufacture of hot asphaltic concrete went crushed limestone, sands from the the near-by Neches River, and a local field sand.

These were cemented with liquid asphalt and laid at approximately 200° F. To heat and dry the materials, 1,000 cubic feet of natural gas were burned per ton of hot mix.

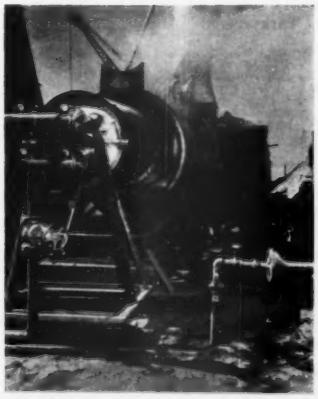
The gas, too, was a local product. It was piped to Trotti and Thomson's plant through lines of Beaumont Natural Gas Company from nearby gas fields.

For the manufacture of the mix, the contractors used a Cedar Rapids Model F plant with an 80-ton drier.

On the streets, Trotti and Thomson use an Adnun spreader and three Huber rollers (two two-wheel, one tandem).

Said Beaumont's Mayor Plummer about the project: "We had to do something and we did. We've got the best paved streets in the South. Just ask our citizens who drive over them."

Here are some of the men that made the improvement possible. From left to right: Mayor Otho Plummer, City Engineer Clyde Black, Councilman James Cokinos, and Contractor Jess Thomson.



This Cedar Rapids plant turnedout the asphalt mix that rehabilitated the surface. Natural gas from the local fields provided the necessary fuel.

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"Technology is man's servant and not his master; where technology dominates, sterility results."

Auto Speedway or Parkway?

By PROF. DR. IR. J. T. P. BIJHOUWER *

THE German auto speedways were amongst the first modern auto roads in western Europe. A very intensive campaign of advertising accompanied their construction. Because of this, the methods and standards of these speedways have also taken hold in the Netherlands and our road designers and builders now also think in terms of straightaways, radii, transition curves, and super-elevations, which make the auto road similar to the railroad. Efforts are made in some places to make the road fit to the surrounding landscape, usually by planting, but the requirements of the road technique in regard to clear view, distances to the roadway intersections, etc., are so strong that the planting is an ineffective way to overcome the differences in scale and technical treatment between the road and surrounding country. In the level farm areas of the west as well as in the picturesque eastern part of the Netherlands, the speedway is a strange and harsh element which bores through the land as a traffic tube. The domination of the technical viewpoint, the influence of technical standards, is so strong that one can hardly speak about the more human side of fitting the roads to the landscape.

After the road misery between Den Haag and Utrecht, and between Delft and Rotterdam, which are technically very good but appalling from a road-user's standpoint, it was a revelation to ride on the road system between downtown Manhattan and the southern part of New York State, Long Island, and the adjoining areas of Connecticut. There, in a territory with at least as great a population density as the Netherlands and a much higher number of motor vehicles per hundred inhabitants and stupendous traffic, a few superhighways, auto speedways, will carry off the long-distance traffic. A very large percentage of passenger traffic follows a very attractive system of parkways, completely fitted to the landscape, which during the last years has also penetrated along Riverside Drive, into the heart of Manhattan.

The road technician in the Netherlands is proud of his straightaways of at least three kilometers, his radii of at least 1,000 meters, his transition curves of 20,000 meters. His American colleague prides himself on the Mount Vernon Highway in Washington, where in the more than 13 miles there is never more than half-a-mile straightaway, but with the careful super-elevation it is possible to drive the whole stretch without moving the steering wheel. What care is given there in the cooperation between the highway department and its landscape advisor, Simonson, to fit the road to the surrounding country! Over and again vistas to the river are opened up, slopes are molded with the utmost care and conservatively planted in order that the road and its users become a part of the landscape.

The Westchester parkways, which stretch as far as New Haven, are treated with equal care and love. Traveling over them is a relaxation after the depressing conditions and the nerve-racking traffic in the inner city of New York.

Opinions on the straight auto speedways are not always favorable. On account of the monotony, there is a tendency toward greater speed and the accident rate seems to be many times greater than on the parkways. There are parts of the eight-year-old speedways which probably will be rebuilt as super-parkways, and rebuilt as a more humane and variety-giving parkway. Most people do not view the super-highway as a road for passenger transportation, but as a truck road, as a tunnel through which every type of freight with tractors and trailers and trucks can be kept away from the smaller traffic. A city such as New York, which can be paralyzed by a strike of truck drivers; where practically all supplies arrive by trucks and trains, has need of special channels for them, comparable to the interior canals in the Netherlands.

The requirements for these truck roads do not need to fit the surrounding landscape, because the scale is not a human one but that of a freight train. The passenger auto, however, needs the human feeling. The users judge the road over which they travel by themselves.

The auto speedway in the Netherlands has eliminated the parkway idea. The traffic technique with its mechanical "super" standards has designed a road system, and partly built it, that does not take account of either the human being as the maker of the Dutch landscape or of the users of the road.

In Germany the speedways fitted completely in the system. There man was nothing, the state everything; military transportation, disciplined and regulated, was the idea. The Netherlands still hold on to a democratic ideal, in which man's dignity and value are recognized. For that reason it is necessary that, in traffic, the technical standards become secondary to the human standards. We have to start a revolution against the auto speedway and we must arrive at a Dutch form of parkway.

* This article, written by one of the outstanding planners in the Netherlands, has been translated for THE AMERICAN CITY from the *Netherlands Magazine for Housing and City Planning* by S. R. DeBoer, community planner and landscape architect, of Denver, Colo.

STATE OF NEW YORK

Department of Public Works, Albany

From NELSON M. WELLS, *Director of the Landscape Bureau*

HIGHWAYS comprise a considerable range of types and classes according to their use. The volume and kind of traffic which they carry are controlling factors in the design of their layout, the land which they require, and the appropriate costs for their construction. The simplest are the country roads which ramify the hills and valleys and connect the farmsteads with the heavier traffic arteries. Next are those which absorb these feeder roads, and the series thus progresses through successively more elaborate types to include those on the primary state highway system, the parkways and the throughways.

Country Roads and Parkways

The country roads and the parkways reflect those attributes which might be called the human factors, whereas all those kinds which are primarily rapid-transit routes are utilitarian and unfortunately have little of those desir-

able qualities of beauty and comfort.

Town and county roads collect the produce from the farms and their mileage predominates over all other classes about six to one in the State of New York. They are Everyman's highway, the sole means of traveling from one farm to another and from the farms to their nearest settlements. Transportation of all kinds uses them, and they are not only a physical part of the countryside but an integral part of the life of every community.

State-owned highways differ from these only in having more direct routes, fewer steep grades, and greater widths, according to their traffic requirements. They serve much the same purposes but on a larger scale, for they also connect farms with villages and villages and cities with each other, and carry all the exchange of produce, industry, passengers, and recreation. They are likewise closely integrated into the countryside.

Then there are the parkways reserved exclusively for passenger cars. These have unique characteristics. They are insulated from and in no way integrated into the community through which they are passing. Cross roads go over or under them with entrances and exits permitted only at planned locations. Usually they lie within a wide band of controlled property with screen plantings along their borders which completely obscure all views into or out from the traveled way, and they become an entity unto themselves. The land forms are pleasingly graded and plantings are introduced which make them essentially elongated parks.

Another Type Needed

A need for another type of highway is growing today and some of these are being built. Like the country roads, they will carry all classes of traffic; trucks, buses, and pleasure cars. Like the parkways, ingress and egress will be only at given points and by interchanges based on grade separations. Their rights-of-way may be as broad as the parkways, but there will be few visual barriers of plantings to insulate them from their surroundings.

Their purpose, of course, is for rapid transit between cities and for distances up to several hundreds of miles. They are called by a variety of names such as throughways, freeways, and expressways. Some of them, like some of the parkways, are operated as toll roads—and in those cases they are no longer Everyman's highways.

At one end of the scale, then, we find that the simplest country road is highly humanized and its design factors—if close adaptation to topography and local needs can be called design factors—are based largely on personal requirements. At the other end, the parkways are also based largely on personal requirements, although they have certain highly sophisticated design factors. Here the engineering technicians and landscape engineers have combined talents to create the ultimate in ease and safety in driving and set them amidst uninterruptedly pleasant surroundings.

The in-between classes—namely, the state highways on the primary system and the new throughways—have been based more essentially on bare utilities. They are streamlined, safe to a considerable degree for even very fast-moving traffic, and they accommodate vast volumes of traffic with great efficiency. Although the personal element has been somewhat by-passed, the importance of such aspects is gradually becoming better appreciated.

These personal aspects include adequate and safe driver services such as wayside stopping places; the use of long-radius curves to obviate the monotony of long tangents; the use of spiral or compound curves to foster safe driving; the separation of opposing lanes of traffic by malls or park strips of varying widths to better adapt the alignments and grade to the existing topography and to reduce headlight glare; and the establishment of roadside plantings to blend the architectural structures and screen objectionable views.

Also, a part of this concept is good grading, which further blends the new construction with its surroundings. The modeling of land forms along the traveled way to create a sympathetic relationship with the adjacent terrain has advantages of reducing erosion, reducing traffic hazards and reducing maintenance costs. And, from the personal standpoint, creating lasting beauty for the foreground views for travelers.

Each of these provisions is an example of recognizing driver psychology, particularly from the standpoint of his safety and pleasure. And they point to the desirability of combining a consideration of human factors with the customary design criteria when planning highways of every class and kind.

STATE OF CALIFORNIA

Department of Public Works, Sacramento

From FRED GRUMM
Deputy State Highway Engineer

PROFESSOR BIJHOUWER refers to the conflict between the so-called "technical" viewpoint and the more "human" character of fitting the roads to the landscape. This, of course, is the old quarrel which the landscaper has always had with the practical engineer and road builder who is concerned only with providing immediately a facility for travel. The problem is, perhaps, an insoluble one because in so many instances the road-building authorities are pressed for money and are continually urged to do more than they are able to do with the funds available and, therefore, are willing to sacrifice the parts of the improvement which are not actually and practically needed.

The same arguments may be applied in this case as in the case of structures—particularly buildings. They are an addition to the face of nature and are certainly not a part of the landscape. A road, similarly, is a manufactured thing composed of both structure and alteration of the landscape, and still it may be so treated that it does not offer violence to the esthetic-minded.

We recognize these possibilities in our work and have had for a long time a landscape engineer with assistants whose endeavor it is to alleviate or remove the scars caused by highway construction and to do what is commonly called "fitting" the road into the landscape. It is accomplished principally through the manipulation of slopes by covering cut slopes and fill slopes with ground cover and by adding here and there appropriate informal planting which, if possible, is indigenous to the locality.

Roadside Eyesores

So many highways become eyesores and are disfigurations, not by reason of the construction of the road, but by reason of the so-called improvements made on the abutting property. How many main roads leading into the smaller communities, and into the larger ones also, are unattractive eyesores simply because of what you see alongside the road!

As the author of the paper himself says, many of these roads must serve commercial traffic—and that is certainly quite obvious in our country. The number of trucks and truck operations has increased enormously in recent years, particularly during and after the war; and the cost of building multilane roads to serve this kind of traffic, together with the enormous volume of passenger cars, has become so great that funds are entirely inadequate to accomplish all that should be done; neither is it possible to acquire, particularly in urban areas, the great width of right-of-way necessary for parkways.

To illustrate: The estimate of cor-

recting the deficiencies in the State Highway System in California—that is, to improve the state highways to accommodate adequately the existing traffic, is in excess of one and one-half *billion* dollars. The Legislature in 1947 adopted and the Governor approved the so-called Collier-Burns Act providing for a considerable additional amount of funds for city streets, county roads, and state highways, and we are now engaged in this large program of improvement. Funds that have been made available by the Act approximate 60 to 70 million dollars per year for construction, which includes engineering and right-of-way. This is a considerable increase over the funds available for that purpose prior to the adoption of the Act. However, on the basis of estimated cost of improvement, our program would require from 15 to 20 years to complete. It includes a system of freeways on the main-travel arteries lying both within and without the incorporated areas.

The Problem of Urban Freeways

The urban freeways, of course, are the most expensive and also the most difficult to design and build. The construction of the freeways includes landscaping, particularly in the urban areas. Those that have been completed so far are an improvement and add to the esthetic values in the areas through which they pass, because not all—in fact, relatively few—parts of a city are really attractive. We have not attempted to create parkways because we did not feel that the very large additional expense for right-of-way justified that kind of treatment. We have, however, secured adequate right-of-way width to permit a reasonable and maintainable type of roadway improvement. An expense which often is not considered and is not immediately apparent is that of maintenance of the landscaping, and improperly treated and installed improvements of this kind can easily cost more to maintain later than their original installation.

In my opinion the function of a highway department is to build and maintain highways, not parks. An inherent part of the operation of the highway is to provide a facility which is not only practically useful but which also adds to the esthetic values of the locality through which it passes; but such treatment does not necessarily reach the characteristics of a park. With those basic conceptions of our work, I am sure many planners will not agree; but if they can accept these principles as those constituting the highway builders' code, perhaps they can be of assistance in achieving the maximum of esthetic value without exceeding the limitation imposed by the practical requirements.

STATE OF OHIO

Department of Highways, Columbus

From T. J. KAUER, *Director*

WE SUBSCRIBE to Professor Bijhouwer's views concerning the desirability of the parkway type of project, but in Ohio the relatively short distance between municipalities makes it prohibitive in most instances to construct such facilities. However, there are several large urban areas in this state which have developed arterial routes similar to the ones mentioned by the author and they are attractive scenic roadways. One of the objections to such drives of any length is the prohibitive cost involved in their development.

In our opinion, adherence to technical standards is desirable, not entirely because of the higher speeds which may be anticipated, but also of the extreme importance of the safety element which is introduced. It is conceded that a touring motorist wishes to enjoy the scenic beauty of a highway, but Ohio traffic data, which reveal that approximately 80% of the vehicular trips are less than 20 miles in length, indicate that economic justification must assume the principal share of dictating design criteria.

Every effort is made to blend each highway improvement into the surrounding territory in such a manner that the esthetic viewpoint is not neglected, and we feel that ability of the taxpayers to finance highway improvements can be served to the optimum advantage by providing facilities which expedite traffic, provide freedom of movement, and offer maximum safety. This can be more realistically accomplished by constructing highways based upon a thorough and intelligent engineering analysis of traffic requirements, such as volumes and type of vehicles, intersections with other major arteries, traffic pattern, necessary access facilities, the increasing importance of right-of-way costs, and other pertinent factors.

STATE OF CONNECTICUT

State Highway Department, Hartford

From G. ALBERT HILL
State Highway Commissioner

FIRST of all, it might be well to disclaim some of the credit which Professor Bijhouwer showers upon the builders of the early Westchester and Connecticut parkways. The rolling curves were not incorporated into the design to satisfy human standards, but merely as a compromise between the technical desires for straightness and flatness and the necessity to overcome the topographic and non-made obstacles to such a desire. Straightness and flatness were sacrificed because their procurement was thought to be too costly at the time the Merritt Parkway was being designed.

Subsequently, it has been shown that, on the roads constructed without that compromise of technical standards and on which unlimited speeds were possible, the motor car and the motorists are not always capable of utilizing the potential speed of that type of facility. For after the initial novelty wore off, the majority settled down to operating their vehicles at speeds only slightly higher than those common elsewhere where physical conditions imposed occasional limits to high speeds.

The highway-design standards of this department were therefore made on the basis of assumed design speeds which vary from 60 miles per hour in rural areas to 40 miles per hour in urban commercial or industrial zones. In the intermediate residential zones a 50-mile design speed is used. The curvature, gradient, and sight-distance requirements of the standards are functions of those design speeds. No design improving on the standards is constructed if it involves an outlay of funds greater than that required for the minimum.

Consistency of design is most desirable. Studies of the specific locations of accidents indicates that an abrupt change in alignment may be the cause of more accidents than a curve of equal sharpness in the midst of a generally curving alignment.

As a review of the *Highway Design Standards for Connecticut* * may reveal, the foremost factors determining our designs are the existing land use and the directional peak traffic flow to be accommodated. All details are contingent upon those determinants.

The standards specify the minimum values for the fifteen other elements of design. Higher standards may be used within reasonable economic limits. Lower standards may not be used without written approval of the Deputy Commissioner and Chief Engineer.

* Available on application to the State Highway Commissioner, Hartford 15, Conn.

Chicopee Connects to Boston Water Supply

The rocky New England soil made pipeline excavation difficult.

TO CHICOPEE, Mass., the new line tapping Boston's famous Quabbin reservoir meant simply that this community was to get a better quality of water. If the only qualifications for water are that it be wet, that if it is poured on a fire, it will put it out, or that if one drinks it, his thirst will be quenched and his health will not be upset, the supply that Chicopee had was satisfactory. But in the mountains to the northeast lay the famous Quabbin reservoir, the supply that furnishes Boston with its water. And this water is so good that Boston's Mayor Curley once said that it tastes like champagne when compared to the foul-tasting liquid that many other cities have to drink. Perhaps this describes it too glowingly; but the facts are that the Quabbin water tastes so much better than the water Chicopee had to drink that the people in this community are today pushing a 15-mile pipeline to this reservoir in order to get it for their own use.

Actually, Chicopee itself is not building this pipeline. The aqueduct, to the city limits, is being constructed by the Metropolitan District Commission of Boston. The Commission, under instruction of the Massachusetts legislature, prepared a study that disclosed how much Chicopee would have to be charged in order to make this line financially self-supporting. The study disclosed that the cost of water at the Quabbin reservoir could be placed at a fair estimate at $20 per million gallons. It also disclosed that communities in the vicinity of Chicopee would probably use 7 million gallons daily. With this information established, the Commission estimated that a price of about $65 per million gallons delivered at the Chicopee city line would be adequate. On a dollar-for-dollar basis, overlooking quality, this does not compare unfavorably with the present cost of water from local sources.

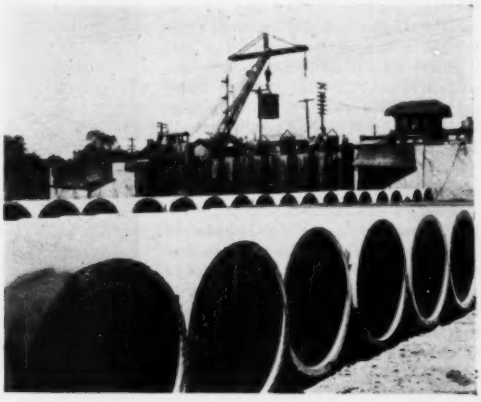
The line, now under construction, consists of 15 miles of Lock Joint steel-cylinder reinforced concrete pipe. The first 24,000 feet of the line is 48 inches in diameter and the next 54,000 feet measures 36 inches. There is an additional three miles in Chicopee proper that is being laid with 36-inch cast iron pipe.

The line will have an open storage reservoir built about 9,000 feet from the city line. It will deliver water at a pressure of 80 psi in Chicopee. The town of Wilbraham will also be supplied and the line is designed so that if in the future, the communities of Ware and Palmer decide to connect to it, they can without difficulty.

The project marks a new point in the history of the Quabbin reservoir, since it is the first time that water will be drawn directly from it for use as a domestic supply. Heretofore, all such use has been from the Wachusett reservoir. Quabbin has been used only to replenish the other. Nevertheless, the analyses indicate that the water in Quabbin is of excellent quality. The only treatment required will be that of screening and chlorinating, but Chicopee is also adding Calgon treatment.

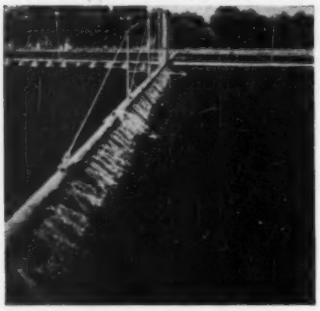
The work of building the new line is being performed by the Construction Division of the Metropolitan District Commission. Karl Kennison is Chief Engineer of the Division, and Stanley M. Dore, Deputy Chief Engineer, supervised the design of the new line.

All pipe was laid to a carefully prepared grade.



The pipe-manufacturing plant was close by at Palmer.

Smaller Sewage-Treatment Plants . . . And Better



Trickling filters also have increased the efficiency of the plant. This one helps handle a difficult sewage and industrial waste in Thomasville, Ga.

Sanitary engineering developments tend to concentrate the size of the sewage-treatment plant into relatively small, compact, efficient units

By FRANK L. FLOOD
Metcalf and Eddy
Consulting Engineers
Boston, Mass.

AS the science of sanitary engineering advances, the size of the sewage-treatment plants grows smaller and more compact. Today the sewage and industrial wastes of a city may be treated to remove their disease-bearing and nuisance-creating characteristics in a compact plant with relatively low operating costs and with all phases of the operation under close instrumentation and control.

One early sewage-treatment method employed broad acres of irrigated fields or sewage farms. Attempts at reducing the tremendous area requirements resulted in the very effective intermittent sand filters. These could treat 75,000 gallons or more per day if the sand had suitable size and uniformity coefficient. In certain small communities intermittent sand filters still afford a practical and economical method of sewage disposal.

Contact filters and trickling filters provided the next reduction in plant area. These were developed in England during the 1890's. Contact filters were not adopted in this country extensively but the trickling filter process has been and remains an important method of sewage treatment. The first trickling filter plant in this country was placed in operation in 1908 at Reading, Pa. The trickling filters soon demonstrated that they could be effectively operated at rates up to 3 million gallons per acre per day, or 40 times the rate for sand filters.

Aeration was the next step and eventually resulted in the development of the activated sludge process. It first was used in the United States in a municipal plant in 1915. By this process, the aeration tanks, comparable in their action to biological stone filters, were found to be able to treat the sewage at nearly 16 million gallons per acre per day.

Prolonged experiments showed how to reduce the area of the trickling filter. Continuous dosing demonstrated that a rate of dosing of 20 to 30 million gallons per day could produce successful treatment and that recirculation of the flow made comparatively high efficiency possible. The first municipal high-rate filter plant was placed in operation in 1936.

During recent years, the rate of operation of the activated sludge process has been speeded, and the present indications are that the aeration tanks will treat up to 35 million gallons per acre per day and still produce a relatively high degree of treatment.

The trend toward reduction in area required for the biological treatment units is summarized in the adjoining column.

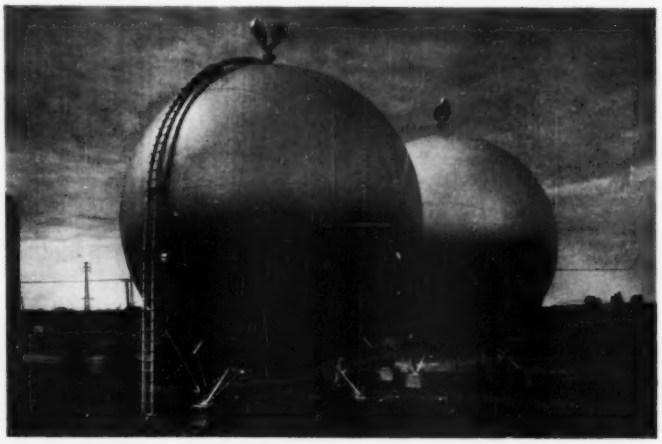
Type of Treatment	*Earliest use in U. S. for municipal plant*	*Area in acres per 100,000 persons for secondary treatment* *
Sand filters	prior to 1900	150
Standard trickling filters	1908	3
Standard activated sludge	1915	0.7
High-rate trickling filter	1936	0.5
High-rate activated sludge	1943	0.3

* Biological unit only; area for secondary settling tanks not included.

Sludge-Drying Area Reduced

There has been a similar trend in the reduction in area requirements for the disposal of sewage sludge. Drying raw sludge on open beds took large areas and was offensive. Digestion of the sludge reduced the area requirements by cutting its volume, but was still substantial. Glass covers over the sand beds provided some small reduction.

The development of sludge dewatering by vacuum filters made practical the treatment of either raw or digestive sludge mechanically in relatively small package units. In cities where disposal of large quantities of sludge cake would be difficult, the problem has been solved by mechanical dryers and incin-



The use of digester gas helps to make the treatment process more economical. Above is a Chicago Bridge and Iron Hortonsphere used at Rock Island, Ill.

erators. Sludge-drying alone is used where it is desirable and economical to produce fertilizer.

For the Los Angeles Hyperion plant, the old-style drying-bed area required for dewatering the sludge would be about 120 acres. This compares with less than 1.5 acres occupied by the mechanical sludge dewatering and drying plant now under construction.

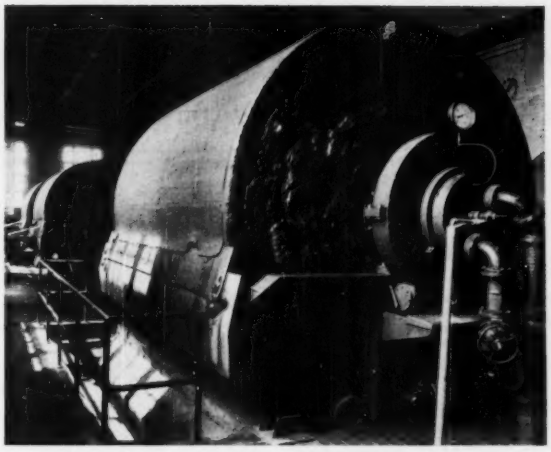
At present, some sanitary engineers are interested in the direct drying and incineration of raw liquid sludges. This process, if and where practical and economical, will result in the elimination of sludge digestion and mechanical dewatering, and reduce plant size still further.

Increasing Treatability of Sewage

Considerable effort has been given to increasing the work that can be done in preliminary or primary sedimentation tanks. A number of the large plants provided short aeration periods of 3 to 5 minutes, to increase the removal of grease and reduce slick areas over ocean outlets. However, this has not proved very effective. But if the pre-aeration period is extended to 15 to 30 minutes, the resultant removals of suspended solids in the sedimentation tanks are substantially improved. Tests made at the Hyperion plant demonstrated that ½-hour aeration of the raw sewage would eliminate all hydrogen sulfide from the sewage, and sulfides would not come back within the 1½-hour period of detention provided in the subsequent sedimentation tanks.

The trend toward more concentrated treatment units has been accompanied by increased mechanization. The modern sewage-treatment plant is not designed by sanitary engineers alone. The sanitary engineer prepares the basic design data and from there on the structural, hydraulic, mechanical, and electrical engineers and the architects carry on to a large extent. The sanitary engineer checks to see that the peculiar requirements for handling sewage and sludge are properly met and that the problems particular to this field are solved satisfactorily.

A large modern sewage-treatment plant may include hundreds of pumps handling a wide variety of liquids and solids, mechanically cleaned racks, screenings grinders, comminutors, mechanically cleaned grit chambers, grit elevators, grit washers, mechanical sludge, and scum-collecting equipment for sedimentation tanks, air diffusers, air blowers and appurtenances, chemical feed and disinfection equipment, vacuum filters and appurtenances, sludge conveyors and elevators, sludge dryers and incinerators, ash-handling equipment, gas storage tanks, gas engines and electrical generators.



Vacuum filters eliminated the need for space-consuming sludge-drying beds. These Conkey filters serve the Detroit, Mich., plant.

Gas is released in the sludge digestion process. This gas normally has 550 to 600 btu net per cubic foot. The power that can be made available from the gas usually varies from 10 to 40 hp per million gallons of sewage treated, depending upon the strength of the sewage and the extent to which solids are removed.

Some plants meet all of the plant power and heating requirements by utilizing the sludge gas in gas engines, reclaiming heat from the engine jackets and exhausts. The recent development of dual-fuel engines using oil and gas has promoted the design in large sewage-treatment plants of power generation sufficient to make the plant independent of outside power. The Nut Island plant now under construction for the Boston South Metropolitan Sewerage District comes under this category. All of the power required at the Los Angeles Hyperion plant will be developed at the plant using either oil or a mixture of gas and oil. There will be nine gas-diesel engines at this plant capable of developing 14,175 hp at rated full load. This will be by far the largest development of this kind in the world. Five of these engines will be connected to generators and four to air compressors. The expected range of operation for each engine-blower unit will be from 30,000 to 40,000 cubic feet per minute of free air compressed to from 6.5 to 7.5 pounds per square inch.

As the prices of other fuels increase, the cost of purchased electric power will probably keep pace and the development of power from gas produced at the sewage-treatment plant will become of increasing value economically.

The necessity for disposing of large quantities of sludge in metropolitan areas has been instrumental in the development of mechanical means for sludge-drying and incineration. The answer to the question of whether to dry for sale as fertilizer or to incinerate depends largely upon local conditions. In Southern California, sewage sludge has been used extensively as a fertilizer for citrus orchards and to a limited extent as a dressing for lawns. At the present time, about 5,000 tons per year of Milwaukee dried sewage sludge is sold in this area at a retail price of about one-quarter million dollars. The average quantity of dried sludge to be produced at the Hyperion plant will be 70,000 tons per year. It is estimated that the average annual return by sale of the Hyperion sludge to wholesalers will be about $700,000.

Conversely the Allegheny County Sanitary Authority in the Pittsburgh area concluded that the drying of the plain sedimentation sludge for sale as fertilizer was unprofitable and inadvisable.

The Toronto sewage treatment plant now under construction provides equipment for either drying or incinerating the sludge. Eventually, an extension of the sedimentation plant to include the activated sludge process is contemplated at this plant, and the fertilizer market may develop so as to make the production of sludge fertilizer both desirable and economical.

All these developments are aimed at producing a plant that is small, economical to build and to operate, rugged enough to treat substantially all the community's water-borne wastes so that they will not be a health menace nor a public nuisance. As these steps in sewage-treatment evolution show, the engineer is now making very substantial progress towards reaching these goals.

American Water Works Association

Sixty-ninth Annual Conference, May 30-June 3, Chicago, Ill.

Meeting Breaks Attendance Records, Stresses Management problems

A TOTAL of 1,967 registrants at the annual meeting of the American Water Works Association broke attendance records by 260 over that set last year in Atlantic City, N. J. The gathering heard papers on water-works insurance, the operation of water works under city-manager administration, groundwater law, water-works personnel and salaries, the ethics of water works operation, and others that showed how those in attendance were looking for answers to administrative problems rather than technical analyses.

The technical aspect of the meeting was not overlooked, however. Perhaps the highlight in the meeting was the report issued in the name of the Association on fluoridation of the public water supply as a dental-health measure. Essence of the report was that if the public has expressed a desire for this treatment, and the local and state health authorities express approval, the water works should properly participate in the program of fluoridation. (See page 108 for full report.) The term, "fluoridation," seems generally preferred over "fluorination," since sodium fluoride is used because it is easier to handle.

A committee report on installing cast-iron water mains produced some controversial comment since the report omitted reference to the sulphur-type jointing material. The material was omitted because some members of the committee reported that it had a tendency to disintegrate.

Others in attendance, however, reported that they had used jointing material of this type successfully for many years and intended to continue.

Dr. A. P. Black, Professor of Chemistry at the University of Florida, took over the presidential gavel, and will serve as president for the ensuing year. He succeeds Linn Enslow, editor of *Water and Sewage Works*.

Ethics in the Water Works Field

WATER-WORKS ethics from the standpoint of the water works administrator, consulting engineer, and the manufacturer were compared at the AWWA meeting. Representing the water works administrator's viewpoint was Samuel B. Morris, General Manager and Chief Engineer of the Los Angeles Department of Water and Power. The manufacturer's viewpoint was presented by W. F. Rockwell, Chairman of the Board of Rockwell Manufacturing Co., Pittsburgh, Pa., and the consulting engineer's by Malcolm Pirnie, of New York City.

Mr. Morris' code of ethics for the public water official might be listed as follows:

1. To cooperate with other agencies such as the public health, public works, and other regulatory commissions, as well as the fire and police officials.
2. To conduct one's work as a professional business executive.
3. To stay aloof from party and personal politics, but to remain active in the legislative halls of the city, county, and nation for legislation needing support in public interest.
4. To maintain cordial dealings with those in his organization. This includes dealing with unions, recognizing the broad aspect of civil service and its possibility of conflicting with the restriction of union maintenance of membership.
5. To restrict "outside employment" of employees by eliminating work with suppliers or contractors with which the water works is having dealings.
6. To know the cost of operation so that a fair rate schedule can be established.
7. To embody in specification the maximum use of fair standards such as those of the AWWA, ASTM, ASA, and others.
8. To recognize the usefulness of trained crews for force account work on the regular run of improvements and economy of contract work for the large and special jobs.
9. To ask for professional service on a basis other than price when calling for the advice and assistance of consulting engineers.

Col. Rockwell gave the ultimate consumer first consideration in his analysis of ethics and summarized views of manufacturer members obtained through questionnaires. Any act or failure to act that gives the customer just cause for complaint of waste of money, insufficient service, or lack of water is in his opinion unethical. However, if the customer fails to support the water works financially he must assume the responsibility himself.

Before considering the manufacturer's ethics as it affects the public water works, Col. Rockwell discussed relations between the manufacturers. Sharp sales tricks, he stated, soon are exposed and may be adopted by competitors in self-defense. Among these he listed unfair samples of competitor's products and appeals to religious, racial, or social prejudices.

The water-works official, he stated, should examine impartially all products, whether new to the field or long in use. He considered it unethical for a consulting engineer active in development of a certain product to frame his water works specifications to favor it.

Unreasonable performance standards also allow unethical action by the manufacturer. It allows the dishonest manufacturer to offer an inferior product knowing that an acceptance test on the basis of these strict standards is not possible.

The term "free service" should be recognized for what it is. If the water officials asks for free service and recommendations from a manufacturer, he must expect that it will favor the manufacturer's product.

Tricky specifications that defeat the purpose of the low bid should be recognized as unethical. Similarly, cash discounts demanded by certain public bodies, even though the time limits specified in the contracts are not honored, may also be considered unfair.

Manufacturers also criticized as unfair the practice of demanding that bids be placed through local trade organizations when the established practice is to sell through established distributors, or direct factory representation. He stated that it was not only unfair but wasteful.

The public's unquestioned confidence in water-supply purity was one of the points made by Mr. Pirnie. He emphasized this as one of the means of giving greater professional stature to the engineer, and stated that it must be considered a great public trust.

Water Works Insurance; a "Must"

EVERY water utility should carry some sort of contractor's liability insurance. If a large water utility feels that it can set aside funds to meet ordinary liability claims, it nevertheless should carry some sort of catastrophe insurance. This recommendation was made by Charles Bourgin, Superintendent and Engineer, Montclair Water Bureau, Montclair, N. J., in a discussion of insurance protection at the AWWA meeting.

If a municipal water works operates as a business function it is as liable as is a private corporation, Mr. Bourgin explained. Some take the attitude that municipal ownership makes negligence hard to prove, but court decisions indicate that this is not so. In any case, he stated, negligent operation is expensive, whether insured or not.

Insurance should cover all public liability and property damage risks found in every phase of construction, operation, maintenance, or repair. If the quality of water also should be insured, an additional premium will be charged.

EDITOR'S NOTE: The Home Insurance Company, New York, N. Y., further suggests that in contract construction the contractor be required to carry liability insurance for bodily injury and property damage as well as workmen's compensation insurance.

State Pays for Main Changes In Freeway Construction

IN GENERAL, when freeway construction is undertaken in a city, the cost of moving the utilities should be part of the construction cost. Two waterworks officials, one from the Atlantic Coast and the other from the Pacific, agreed on this principle at the AWWA conference.

L. W. Grayson, Superintendent of Public Utilities, Riverside, Calif., was the first to express his opinion at this panel discussion. In his state, freeway construction requires relocation of all utilities, including water. In some small communities, the relocation cost equaled the total capital investment, and if it were to be borne by the utility, it would mean substantial rate increases if the system were to remain solvent. Originally the Division of Highways disclaimed responsibility. In 1947, however, state legislative acts changed this policy. Present provisions are:

1. Utility relocation is recognized as a reasonable cost and becomes a part of the highway costs.
2. Publicly owned utilities are in some instances given a more liberal treatment than private when these costs are allocated.

Under California law, any move on the part of a utility to a point outside the freeway right-of-way shall be reimbursed from state funds. Any move within the freeway shall be at state cost if the installation had been placed before the highway became a part of the state system. The cost of relocation of utilities owned by private companies depends on proof by the utility that the move is not a contractural obligation. Subsequent moves required by the state more than once in 18 years are to be paid for by the state. Depreciation of the utility property, salvage, and betterments are all credited to the state against work completed. The state is empowered to advance funds if the utility does not have them to make the necessary changes.

The practice in Newark, N. J., where much freeway construction has been completed in recent years, was outlined by William G. Banks, Division Engineer, Division of Water, Department of Public Works. Mr. Banks stated that if the state highway commission makes changes in alignment and grade of any existing highway, the state reimburses the utility for any changes required. The cost of improvement and betterment, however, is borne by the utility.

In freeway construction, all utilities are excluded from the freeway right-of-way insofar as possible, and the state pays for relocation of utilities disturbed. In general, utility crossings are made at grade intersections. If it is necessary to make a crossing at an intermediate point, all shall be underground with manhole access points outside the right-of-way. Water facilities are to be constructed of extra long-life materials, not subject to leakage. Valves and appurtenances are all to be located outside the right-of-way. When large water pipe must be used in the crossing, they must pass through pipe galleries.

Industrial Water Rates

INDUSTRIAL water users should pay not less than one-third the residential cost. This is the opinion of Charles H. Capen, Chief Engineer, North Jersey District Water Supply Commission, Wanaque, N. J. Mr. Capen expressed it when taking part in a panel discussion on water rates.

The industrial water rate should cover the cost of production plus transmission, distribution, meter reading, and overhead.

City Manager Best For Water Works

A CITY gets the best operation of its water utility under the city manager system. This was the opinion expressed at the AWWA meeting by Gerald E. Arnold, Director of the San Diego Water Department, and for a period, Assistant City Manager of that city. The strong-mayor form, in which the mayor is executive head of the city, can perform equally well. It may, however, be hampered by political expediency. Under the commission form, each commissioner operates independently and the system has no over-all head.

Under the city-manager form, the water department fits into the official family nicely. The auditor-comptroller administers finances and water funds. The city attorney handles legal problems. The civil service handles personnel. The public-works department is able to lend its facilities. The street department gives prompt clearances for new installations. The city engineer supplies new information and maps, as well as data on open and closed streets. The fire department provides information relating to hydrant rental and also makes it possible for the water department to cooperate in the event that there is a large fire. The departments of health, police, planning, and parks also are able to integrate their work with the water department for more over-all efficiency.

Airport Zoning Needed

TALL buildings, radio towers, trees and poles in areas adjacent to airfields are a menace not only to aircraft, but to the property itself. These hazards "can be greatly reduced by proper planning implemented with zoning ordinances and enforcement," stated Isaac L. Ledbetter, Jr., Chief, Air Naval Facilities Planning and Control Staff, Civic Aeronautics Administration. In view of this need, Mr. Ledbetter has gathered the "working data of most major zoning requirements or recommendations that can influence an airport." These regulations and their applications were analyzed by the speaker before the Air Transport Division of the American Society of Civil Engineers at its spring meeting in Oklahoma City. He said that progress has removed the airport from the category of a limited open area, or cheaply paved runways, and miscellaneous buildings and hangars. Airports have developed into efficient industrial plants where operations are precise, timed, and of a mass-production nature.

Out of the Financial Doldrums and Into a Tornado

BUT CAPE GIRARDEAU EMERGES IN CLEAR

Civic co-operation in city affairs is indicated in this photograph. Earl Kirchhoff, chairman of Junior Chamber of Commerce fire-prevention activities, presents Fire Chief Carl Lewis a check for $421 for department uniforms as Commissioner Cleo Johns looks on.

By JOHN L. BLUE

A YEAR AGO Cape Girardeau, Mo., a city of 20,000 persons on the Mississippi River 100 miles south of St. Louis, was in the financial doldrums. Its treasury was not empty, but for three successive years a deficit was shown that was eating away the surplus built up during the war when materials were scarce.

Preceding administrations had been content to rock along on what was coming in, giving little service and afraid to face the future. With lack of foresight in its leadership, the city looked at the post-war period with no assurance that things would get any better, and certain that unless something was done they would get much worse.

Then came the quadrennial election. The people elected three vigorous young men—Mayor Walter H. Ford is 38—and retained one member of the previous city commission, a four-man council. The others are Health and Fire Commissioner Cleo Johns, Street Commissioner Louis Brune, and Park and Finance Commissioner Charles Schweer, the holdover.

A Year's Accomplishments

Briefly, here is what the new administration has done since it came into office in April 1948.

The members of the city council negotiated a contract for garbage that had been dumped previously, securing $1,500 which had never before accrued to the city. They hiked the tax rate 10 cents, a step previous administrations would not take, and received no complaints from the people. They put in parking meters, expected to net $15,000 annually as the city's share until paid for. They placed a 2½% gross-revenue tax on both the private utility and telephone companies, expected to net $25,000 annually. It is hoped that these sources, plus new methods of handling gasoline and other savings, will add $75,000 this year, a tidy sum for a city this size.

From this added revenue the people are for the first time receiving adequate service from their tax money. A police officer is soon to go to Washington for a three-month course of training at the F.B.I. Police Academy. Two new garbage trucks have been purchased. A night baseball field is to be erected for opening in June with no direct cost to taxpayers. Bond-issue proposals for two new fire stations and a swimming pool are to be submitted in late spring or early summer. Street repairs are being made continually. A $100,000 sanitary-sewer system is in the offing for two sewer districts. City employees have been given pay increases amounting to more than $10,000 annually. A new police car and two new motorcycles have been purchased, and another patrol car is furnished by an automobile dealer with no cost to the city. The street department has added two new trucks and sewer-cleaning equipment. The park department has bought a new truck and the health department a new tractor.

In making this mark, the administration has had the wholehearted support of the community and its civic organizations. The Junior Chamber of Commerce raised $421 to purchase new uniforms for fire department personnel.

In a six-week project, working every week-night, the Jaycees took down hundreds of street signs, repainted them, and with aid of city employees put them back up. Members are now engaged in raising funds to purchase additional street signs.

The Kiwanis Club is working with the city in the construction of the lighted baseball field. It will build the grandstand and furnish the canvas fence to screen the field during games. In a similar manner, other clubs and individuals are working closely with the administration.

Tornado Strikes City *

It was such backing that helped carry Cape Girardeau through in May when it suffered the greatest disaster

* EDITOR'S NOTE: After the first part of this article was set in type, a tornado swept through the residential district of Cape Girardeau on May 21. To bring the original story up to date, the author describes the disaster-relief efforts which were taken.

Three city workers, in the shadow of a house with one wall demolished, clear debris from sidewalk and street after the tornado.

since it was founded as a trading post 244 years ago.

In a period of 10 minutes a tornado, traveling a southwest-northeast path, cut a swath through heavily populated residential districts. Ninety square blocks were reduced to a shambles, 22 persons lost their lives, and 112 were injured seriously enough to require hospital treatment.

The citizenry sprang into immediate action. Within minutes after the storm, volunteer workers stood at intersections leading into the devastated sections and kept the curious out. The local Naval Rerserve Unit, within an hour, was mobilized and patrolling the storm-torn streets. Two hours later the National Guard was on the job.

Mayor Ford, who saw the storm strike while at police headquarters, jumped into his car and raced to the Marble City Heights—Red Star suburbs, where the toll was heaviest. There he helped carry injured from houses. Commissioner Brune, whose home was destroyed, worked in the same section, and Commissioner Johns, director of the fire department, stood by with crews ready for fire calls.

Later, when the situation became more stabilized, the mayor made a tour of the area with other city officials to survey the damage. A headquarters was maintained at the police station and volunteer workers were directed to spots where they were needed most. The work of looking for dead and injured went on most of the night.

Federal and State Aid Help Out

Two days after the tornado the city could more calmly appraise the job that was ahead of it. A call came from Congressman Paul C. Jones in Washington with word that federal funds might be available for debris removal. This was looked into, and on Wednesday a representative of the Federal Works Agency was in the city to go into the matter.

By Sunday, a week after the storm, the signature of Governor Forrest Smith had been affixed to the agreement which would bring $15,000 in government funds to aid in storm-clearance work. Two days later, the county representative in the Missouri General Assembly had introduced a bill alloting $20,000 from state funds for the same purpose.

But in the first week after the storm the city had spent $5,000 of its own money for labor, equipment rental, material purchase, and incidentals essential at the moment. This could not be reimbursed from federal funds, since it preceded the agreement.

Twenty-seven men, two foremen, a bulldozer, a highlift and a fleet of seven trucks supplemented the work of the regular street, park, and health-department forces. Three days after the tornado, crews had covered the 19,000-yard path of the storm, clearing streets to allow traffic to pass through.

Storm sewers and catch basins needed cleaning. Hundreds of fallen trees were sawed into logs so that they could be handled. Tin roofing, lumber, scraps of furniture, clothing, and innumerable items of debris were hauled to dump grounds and burned.

The Red Cross was on duty immediately after the storm and the following day established rehabilitation headquarters. Residents who lost their homes applied there for aid in rebuilding. Red Cross officials estimate that better than $500,000 will be spent in furnishing funds for rebuilding to needy families. Insurance adjusters said that more than $1,500,000 in insurance claims were settled.

Eleven days after the tornado struck, many houses were being rebuilt. In a two-day period permits for construction amounting to $63,700 were issued by the city—building fees waived. This was only the groundswell of the tide to follow.

The city had expected, in a statement just a few days before the tornado struck, to end the year with a surplus of almost $10,000. It won't be that great now, but with federal and state money to aid the rehabilitation effort, officials still expect to end the fiscal year with a balance.

Had it not been for the help of federal and state appropriations, the municipality would have been years recovering from the storm and would have had to borrow money to tide it over until such time as the budget could again be balanced. But the administration realized the full scope of the disaster from the beginning, and was able to put its fingers on the correct spots for the urgently needed aid.

State and Regional Community Institute Planned

"NEW JERSEY'S Common Stake" is to be the theme of a State and Regional Community Institute of the New Jersey Citizens' Conference, to be held at Glassboro State Teachers' College, August 11-14.

The Institute program will emphasize three major topics: (1) The common stake of New Jersey citizens in viewing their state as a whole; (2) the South Jersey scene, and (3) the local community-building job.

Other features will include case studies of two New Jersey communities; off-the-record consultations on community problems; round-table discussions of such subjects as migrant labor, health services, vocational training needs, comprehensive recreation, and physical planning, and a forum on "New Jersey's Common State."

For full details address the New Jersey Citizens' Conference, Room 318, 790 Broad St., Newark, N. J.

The municipal airport, a surplus army airport acquired by the city, which voted bonds of $115,000 for additional land purchase and improvements. The Civil Aeronautics Administration has advanced $92,000 for runway surfacing, and other improvements.

A crew at work with a Koehring mudjack. Using this method, the City of Cape Girardeau brought eight blocks of old streets back to grade with a mixture of mud and cement, filling hollows beneath the concrete that threatened to completely deterioriate the surface.

Kansas City, Mo., Develops Garbage-

Hog raising on concrete at the Kansas City municipal farm.

Penal farm hog feeding using city garbage meets public health standards, shows profit, provides prisoner rehabilitation

By **HAYES A. RICHARDSON**
Director of Welfare
Kansas City, Mo.

THE health authorities like our program. The refuse-collection and disposal men like it. Those charged with city finances like the profit angle. The prisoners enjoy the work. The penal authorities like the type of work provided. And even the pigs seem to enjoy it.

Consequently you can see why we are encouraged over the garbage-cooking, hog-feeding program now in use in our city.

Penal Work Program

The program grew out of the rehabilitation of our penal institutions. These institutions — Men's Prison and Women's Reformatory — when taken over by the present Director of Welfare on June 4, 1940, after 14 years of neglect by a political machine, were found to be in a deplorable condition. More pathetic still was the fact that there was no work program. What existed was the bare carcass of years of exploitation. There was not a chicken, pig or cow on the Farm, few vegetables were raised and almost all the Farm operation was centered around the growing of corn and, for a number of years, no satisfactory report had been made to the city government as to its disposition.

It was necessary to reorganize the whole department immediately. The penal institutions, operating under the Social Service Division, were among the sections receiving first attention. Competent and qualified personnel had to be obtained; a work program that would be helpful to the inmates and provide services at the lowest possible cost had to be established.

Hog Feeding Started

One of the major programs started was that of hog feeding, which utilized the garbage from the prison kitchens and was subsequently expanded to include that of the municipal hospitals. In order to eliminate any criticism of using garbage, particularly that from the Tuberculosis Hospital, vats were improvised into which live steam, at a temperature of over 200°, was forced. The Health Department was asked to inspect the setup for any possibility of contamination to the hogs. It was approved with a large margin of safety. In addition, we discovered that much of the garbage which was inedible in its raw state would now be eaten by the hogs.

The first group of hogs were feeders weighing between 90 and 110 pounds. These were "fed out" at around 240 to 260 pounds. In order to avoid waste, we tried experimental feeding slabs. Later we developed the idea further, to see whether it were possible to conduct all hog feeding on concrete platforms, and then to keep down disease, provide greater cleanliness and utilize feed more effectively.

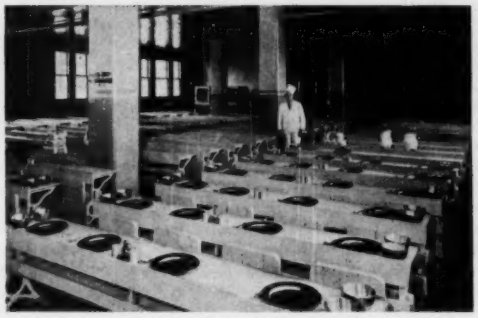
Some of the feeder hogs bought were "piggy" and their offspring were raised. Prior to that time, all hogs fed at the Municipal Farm were bought as feeders. These "piggy" sows and their families proved so profitable that we purchased a group of gelts and a couple of boars. Gradually this program was expanded until, during the last three years, every hog at the Municipal Farm has been raised from a pig, and a herd of about 1,000 are now being fed.

After the innovation of feeding hogs on concrete, the question was raised as to why would it not be advantageous to breed and raise the small pigs on concrete? Two pens were then built as an experiment and the small pigs were bred and raised without touching the ground. Records indicated that these pigs were sold at the end of seven months with an average weight of 267 pounds. At the present time, we are completely equipped with concrete feeding platforms and have 33 cement farrowing pens with plans under way to double this number. Owing to lack of concrete facilities, the sows between farrowings and about one-fourth of the hogs between weaning and attaining 100 pounds are allowed to run in pasture. The difference in weight acquired on cement as compared with pasture justifies future plans to take care of all feeder stock on cement.

The hog project on cement has also lent itself to other developments. A water line is run through both the feeder and the brooder houses with an outlet in every house to which a spray shower is attached, which helps keep

Cooking Program To Feed Its Hogs

The corridor of the municipal farm as it looked in 1940.



The dining room of the municipal farm after 1941.

the houses cool in summer. In addition, there are outlets from the line that permit easy washing of the pens. An electric line run through the pens provides light and, when necessary, electric heaters are connected to heat the pens and protect the birth of, and the health of the young pigs.

An interesting fact is brought out in looking over the range of the sales prices of hogs. Some were sold November 6, 1940, at 6 cents per pound while on August 25, 1948, 24 head were sold at 31 cents per pound.

As the program has developed, additional garbage has been obtained. Vegetables and fruits discarded at the Municipal Market, where the fruit and vegetable business is centralized and under the control of the Welfare Department, are now collected by the Municipal Farm. In addition to providing a large food supply, these collections saved the city between $10,000 and $12,000 a year in collection costs. Oftentimes, a carload of potatoes, celery, spinach, cauliflower, carrots, cabbage, and squash, may be discarded and brought to the Municipal Farm for feed.

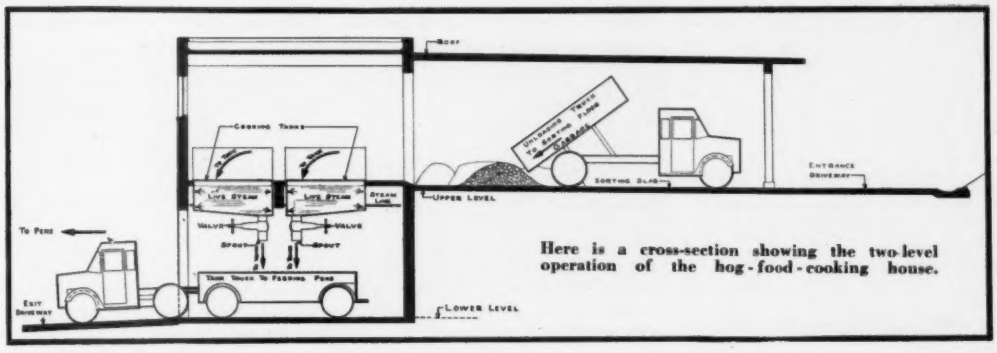
We now collect garbage from a large government plant, and discarded potatoes and potato flour from a large potato-flour mill. Food condemned for human consumption by the city and state health departments as well as the Pure Food and Drug Administration, also is often used.

Savings

For the first eight months of the fiscal year 1948-49 (May 1 to Dec. 31) garbage in the amount of 2,943 tons was used for feed which, in turn, has saved the city $3.36 per ton which would have been the cost of collection. The total revenue for the first eight months of 1948-49, from hogs, amounted to $31,238.85 and it is expected that before the end of the year this will be increased to better than $50,000.

As collections have increased, the problem has arisen as to the most efficient use and processing of this large amount of garbage. Formerly, the cooking vats into which the live steam was forced rested on a concrete floor. This necessitated lifting this huge quantity into the vats and then dipping the cooked product out into 27-gallon cans for feeding. The problem of greater ease in cooking by an assembly line flow of raw garbage through cooking vats to the pens is now being devised. A new cooking process has just been perfected.

A new building and its equipment were designed by the Public Works Department and constructed entirely with



Here is a cross-section showing the two-level operation of the hog-food-cooking house.

prison labor directed by members of the staff at the Municipal Farm.* It consists of two floors 24 feet wide, 42 feet long and 26 feet 10 inches high. Garbage, brought in by dump trucks on the top level, is unloaded on a concrete apron where it is sorted and placed in four cooking vats. Each of these vats has a capacity of 3,500 pounds and is sunken flush with the floor so garbage can be shoveled into it. Cooking is done with a 100-hp. low-pressure, hand-fire boiler with raw steam conducted through the vats in perforated coils. The advantages of this process over the old method are that a vat of potatoes can be cooked in 50 minutes as compared with 4 hours by the previous method. Most of the food value, particularly in vegetables, is saved, since this type of cooking may be compared with a pressure cooker used in the home. After cooking, trucks come in on a lower level under the vat where a wheel-type 10-inch valve is used to release the cooked food into trucks or cans.

No Trichinosis Infection

The United States Public Health Service reports† that trichinosis infection is very much greater in garbage-fed hogs, particularly those fed infected pork scraps, than in those that are not garbage-fed. It was suggested in this government report that garbage be disposed of in some way other than through hog feeding because of the difficulty of finding a practical method of cooking. The process used here has been found to be satisfactory and to meet health standards.

The whole program has been developed logically to meet requirements of feeding and utilization of prison labor. Each step has been the result of practical experimentation, and "bugs" have been worked out as the project has developed. It is an ideal way to use large groups of men such as are found on a municipal prison farm. It has been found that misdemeanant prisoners, better than 70% of whom are confined for alcohol-conditioned offenses, are helped through outdoor work which is recognized as being productive. Around the prison farm a gun will seldom, if ever, be seen. This is also an example of the initiative and attitudes which can be developed in city employees of a non-partisan government, where they are chosen under a merit system; responsible to no political group, and where advancement and progress are based upon productivity and service.

This whole program has expanded from its small beginning in 1940 when sales of $3,179 were made, to better than $50,000 in 1948-49. This does not include the increase in inventory that has been made entirely through natural growth. A total revenue of $220,000 has been provided to date with corresponding savings to the city from the garbage collection. The Welfare Department has suggested that, when the present contract which has several more years to run expires, all the garbage including residential be collected by paid employees and brought to the farm to one large sorting slab where the edible portion will be cooked and the inedible portion incinerated. It is estimated that $250,000, the total cost of collection, can be saved each year. The present building is so constructed that it can be be added to in future expansion.

It should be noted that this hog program, whereby the pig from birth to market may never touch the ground, has lowered the hog mortality rate to 12% which is considerably below the national average. With better breeding, this may be even further reduced.

Other projects developed at the Municipal Farm include a poultry program where between 6,000 and 8,000 broiler chickens are raised each year; a large vegetable as well as grain program has been instigated; a cattle-feeding program has been started with 42 head; and this year the Public Works Department has hauled dead trees collected throughout the city to the Municipal Farm where they are cut into wood. Most of it has been fired in the furnaces but some is sold to wood yards. Better than 1,500 cords have been disposed of in this way since November. The Farm has been increased in size until it now consists of more than 350 acres and an additional amount of tax-delinquent land will likely be added. Auxiliary land connected with a large municipal airport in Kansas City consisting of approximately 700 acres has been taken over by the Municipal Farm for the raising of small grain crops, pasture, and the eventual possibility of developing a cattle herd.

* Recognition should be given to Mr. Robert L. Taylor, Commissioner of Social Service, and Mr. Cyriel Provyn, Superintendent of Penal Institutions, for their suggestions, and to Mr. Kenneth W. Fink, Chief Architect of the Public Works Department, for drawing plans and specifications.

† 1. "Garbage-Fed Hogs, A Public Health Hazard"—THE AMERICAN CITY, August 1948, page 19.

2. Control of Trichinosis—Public Health Report, Vol. 63, No. 15, pp. 478-479.

Planning, Equipment Clinic Are APWA Program Highlights

LONG-RANGE planning of public works will be one of the major topics of discussion at the 55th Annual Public Works Congress and Equipment Show in Kansas City, September 18-21.

James W. Follin, Assistant Administrator, Federal Works Agency, and Governor Val Peterson, of Nebraska, will lead a panel session on this subject. Other participants at the session include Robinson Newcomb, Council of Economic Advisers, Executive Office of the President; I. Alvin Pasarew, Director, Maryland State Planning Commission; Edmond N. Bacon, Executive Director, Philadelphia Planning Commission, and T. Ledyard Blakeman, Executive Director, Regional Planning Commission, Detroit.

The Equipment Show, scheduled for the Kansas City municipal auditorium, will be the largest ever held by the Association. An entire afternoon will be devoted to an equipment clinic when special exhibits and demonstrations will be put on by exhibitors.

Public-works financing holds another important spot in the Congress. Frank Gillelin, President of the Los Angeles Board of Public Works, will chair this round-table. Orin F. Nolting, Editor of *Public Management*, Chicago; R. F. Agard, Director of Finance, Kansas City, and Joseph J. Mitchell, City Comptroller, St. Paul, Minn., will be other participants in this session.

Warren Coolidge, Nashville's Director of Public Works, will be chairman of the technical session on refuse collection and disposal. Ralph C. Taylor, Superintendent, Waste Collection Division, Cincinnati, will discuss legislative developments affecting garbage grinders, while Henry W. Taylor, consulting engineer of New York City, will consider the financing of disposal operations. R. A. Williams, Director of Public Service, Miami, Fla., will discuss the Verdier process of garbage disposal. Mr. Williams recently returned from Europe where he studied the Verdier process.

On the topic of traffic safety, T. J. Sebun, Traffic Engineer, Kansas City; D. Grant Mickle, Director of the Traffic Engineering Division, Automotive Safety Foundation, and G. J. Fisher, Traffic Engineer, Wichita, Kans., will be the round-table participants.

Sessions of interest to public-works administrators include organization, personnel, and public relations of a public-works department. A discussion of public works and disaster relief will be led by William A. Bowes, Commissioner of Public Works for Portland, Ore.

Other technical topics to be discussed at the four-day Congress are: street maintenance, street cleaning and snow removal, motor equipment, and street construction and layout.

DETROIT, MICH., DEVELOPS

Economical Asphalt Street Maintenance

FOUR METHODS PROLONG THE USEFUL LIFE OF ASPHALT PAVEMENT AT REASONABLE COST

By CHARLES L. SHATTUCK
Engineer of Asphalt Construction
Department of Public Works
Detroit, Mich.

THE City of Detroit has, for several years, given special study to patching and resurfacing its old asphalt pavements. Methods of doing this work in recent years have resulted in considerable savings.

Many of our old pavements consist of 3½-inch asphalt (2-inch sheet-asphalt mix on 1½-inch binder) on 8-inch concrete base. These streets are from 20 to 35 years old, and while many square yards of these old pavements are still in very serviceable condition, each year finds some in need of reconditioning.

Before World War II, a regular program was followed of taking out the old pavement and building a new one, or stripping off the old 3½-inch asphalt top, patching the base, and reconstructing a new 1½-inch binder and a 2-inch sheet mix top. In order to economize during the war, lower cost methods were developed. From the experience gained, four methods have become more or less standard. These consist of patching the old sheet asphalt and resurfacing it with asphalt mixtures, the nature and thickness of which depend upon the condition of the old pavement and, of course, the traffic.

Before resurfacing or treating by any one of the four methods, the old pavement must be conditioned to make the resurfacing most effective. This is accomplished by these two steps:

(a) Patch holes and fill wide cracks with sheet-asphalt mixture or fine graded asphaltic concrete mixture, well compacted in place by tamping or rolling. A binder course of variable thickness and dimensions is used to level irregular areas and strengthen weak spots. "Fine binder," described later, is frequently used for this as it lends itself to a smoother surface, especially at the thin edges. Do not use SC grades of road oil in patching mixtures just previous to the resurfacing because the SC oil has a tendency to flux with and soften the asphalt cement in the resurfacing mixture. For winter patching, the SC road-oil mixtures are quite suitable for temporary work and are used as a matter of convenience. However, such patches used within the past year are taken out and replaced with a more stable patching material, before resurfacing operations. Also if patches are made with cutback asphalts, it is best to make them several weeks before the resurfacing is attempted, particularly with an MC grade.

(b) Clean surface by sweeping or flushing. If flushing is used, the surface should be allowed to dry thoroughly before resurfacing—sweeping is preferred, however.

Method I—Surface Treatment

Where the old surface shows little sign of base failure, thin treatments are used as described under Methods I and II. The first uses soft asphalt cement or high-viscosity asphalt emulsion with precoated sand. The step-by-step procedure is as follows:

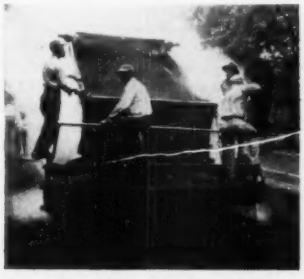
(a) Using a pressure distributor, apply to the old patched and cleaned surface approximately 0.25 gallon per square yard of asphalt cement (120-150 penetration) which has been heated to 375-385° F.

(b) Immediately cover this with 20 to 25 pounds per square yard of warm concrete sand which has been previously dried and coated with 5% by weight of MC-2 cutback, in a hot-mix plant. The sand should be between 200° and 230° F. when mixed with the MC-2, the latter heated to about 130° F.

(c) Open street immediately to traffic. Heavy pneumatic-tired traffic kneads the sand into the soft asphalt and forces the sand-asphalt mixture into the cracks—this is a very necessary part of the operation. The sand is lightly broom-dragged occasionally to keep the spread uniform while traffic is beating it into the asphalt. No rolling is necessary where traffic is moderately heavy. Streets subject to very light traffic should be well rolled with a pneumatic-tired roller.

(d) Application of additional precoated sand and light broom dragging is continued until no more sand will be absorbed. This may take two days. Any whip-off sand is brushed back over

A South Bend distributor applies 0.25 gallons per square yard 120-150 penetration asphalt cement.



A truck with a Buckeye spreader then applies precoated warm sand containing 5 per cent MC-2 cutback.

This is how one 25-year old street looks after treatment. The area to the left shows the condition of the old pavement.

A Barber-Greene paver lays ⅝-inch sheet-asphalt mix after bond-coating it with 0.25 gallon per square yard of asphalt emulsion.

This picture shows how a typical residential street looks after this surface treatment.

the surface. The total amount of precoated sand required for the entire treatment is about 25 pounds per yard.

Treatment is usually omitted on a 3- to 5-foot width adjacent to the curb to prevent the sand from dropping into sewer basins. The method described can be satisfactorily used only during hot weather—in cool weather the asphalt cement will become too hard to absorb sufficient sand.

Quick-Breaking Emulsion Used

In 1947 a high-viscosity quick-breaking emulsion was used in place of the 120-150-penetration asphalt cement. This met Detroit's specifications for asphalt emulsion AE-3-B. Rate of application was 1/3 gallon per square yard—temperature of emulsion when applied through a distributor, 140° F. The results were very good—there was less bleeding, consequently less curing time. It is intended to use the asphalt emulsion on all future work of this nature. A street crew of seven men can furnish from 10,000 to 13,000 square yards of this seal coat per day.

Method I—Costs

The city treated, by Method I, 500,000 square yards in 1945, 600,000 square yards in 1946, and 800,000 square yards in 1947. No seal coat work was done in 1948 because of a huge resurfacing program which was given priority. The itemized cost of the work in 1945, which produced an average thickness of seal of about ¼ inch, was as follows:

	Per sq yd.
Preparatory work (conditioning old pavement)	1c
Material cost f.o.b. truck at plant (including labor)	4c
Street labor (including hauling)	3c
Overhead and supervision (including equipment, depreciation and miscellaneous charges)	1c
Total	9c

Cost of the work in 1946 was 9c per square yard, and in 1947, 13c per square yard.

This method generally gives excellent results as a seal coat. We did have a little difficulty on a few heavy-traffic streets where sufficient sand was not kneaded into the asphalt, and a slippery surface developed the following year. This condition developed on work done in late autumn. It was readily corrected by spreading a light coating of ⅜-inch aggregate and rolling. In this correction work, hot crushed aggregate of ⅜-inch size was sometimes used to secure better and more prompt imbedding in the asphalt. The hot aggregate is much better to use in cool weather when the asphalt is too hard to absorb the cold aggregate readily.

Method II—Thin Plant-Mix

A second and more substantial method, consisting of a thin resurfacing with a hot plant-mix made of a comparatively soft asphalt cement, is described in Method II.

(a) Apply a tack or bond coat of 0.2 to 0.25 gallons per square yard of emulsified asphalt meeting Detroit's specification for asphalt emulsion AE-3-B, which contains about 60% bitumen. It is heated to 150° F. and applied by means of pressure distributor.

(b) Spread on this treated surface, using a paving machine of the tamping type, about 60 pounds per square yard of hot sheet-asphalt mix, which contains 10.3 to 10.5% asphalt (85-100 penetration) and 9 to 10% 200-mesh mineral filler.

(c) Roll immediately after spreading, using a 10-ton or, preferably, 15-ton tandem roller.

Method II—Costs

In 1946 about 50,000 square yards of this type were laid at an average cost of 38 cents per square yard, including bond-coat and preparatory work. In 1947 a total of 350,000 square yards was laid at a cost of 41 cents per square yard. No yardage was laid in 1948, owing to heavier resurfacing more urgently needed and which taxed the two city plants to capacity.

The more costly Method II reduces the chances of a slippery surface and will, of course, better level a rough surface than Method I. While this thin plant-mix resurfacing was begun as a temporary measure to tide over during the war, it has proved so satisfactory that its use will continue on the old residential streets. How often these treatments will have to be repeated, time will have to tell, as the first street treated with Method II in 1945 is still in very good condition. The thin plant-mix can be feathered out around manholes without raising them, which is an important item of cost in the reclaiming of old streets.

These thin treatments are used where the old pavement shows fairly good base and is not so rough and irregular but that it can be readily patched to a fairly smooth contour before the thin course of plant-mix is applied. Where heavy truck traffic prevails and the base shows signs of weakness or the roughness is too great for 60 pounds of surface mixture to level, Method III, as described below, is used.

Method III—Using Fine Graded Binder

(a) Apply a bond coat of about 0.25 gallon per square yard of emulsified asphalt meeting Detroit's specification AE-2 or AE-3-B.

(b) Using a paving machine of the tamping type, spread about 1 inch of "fine binder mix" and roll well with tandem roller. The "fine binder mix" is made of ½-inch-maximum-size aggregate instead of the 1¼ inch used in regular binder course.

Proportions of the "fine binder mix" when slag is used for the coarse aggregate are as follows:

Pass ½", ret. on 10 mesh	75%
Pass 10 mesh (natural sand)	20%
Asphalt cement (60-70 pen.)	5%

If crushed stone is used for the coarse aggregate, the percentages are changed to 76, 20, and 4.

(c) Construct on this binder course, about 1 inch per square yard (100 pounds) of standard sheet-asphalt mixture, by approved methods, using

tamper-type street-paving machine.

This 1-inch sheet mix on 1-inch fine binder has been extensively used in resurfacing streets with street car tracks, the 1-inch sheet mix being feathered out close to the track area and the 1-inch binder slightly farther back. Most of these tracks will be abandoned before many years and then the car-track area will be resurfaced to the required thickness and proper crown.

In areas where parked automobiles along the curb have rutted the pavement, and at bus stops, a special design and mix have been used very effectively. In the repair of the bus-stop areas, which give the most trouble, we usually strip the old pavement to the base for a distance of 50 feet along the curb, approximately 10 feet wide, and replace with the mixture described below (our original surface thickness is generally 3½ inches).

In new work we use a 3½-inch-thick form for this parking area and pave with mixtures noted, then remove the forms and join the regular street mixture to it as paving progresses.

General operations on the bus-stop-area work is as follows:

1. Use regular binder mixture (coarse graded type with crushed stone graded from 1¼ to ½ inch) and place first layer to depth of 1½ inch compressed. Allow to cool after rolling and then place the second layer to a depth of 1½ inch compressed. Allow this layer to cool thoroughly and construct the top layer ½ inch thick, using mixture approximating the following:

Crushed stone, passing ½" and retained on ¼"	65.0%
Sand (asphalt grading) passing No. 6 mesh	25.0%
Mineral filler	5.0%
Asphalt cement (60-70 penetration) approx.	5.0%

Close the finished surface voids with two light applications of coal-tar-pitch emulsion (we use the type trade-named "Jennite") using about 1/10 gallon per square yard per application. This can be applied by hand "squee-gee" method or with a suitable spray apparatus. If desired, a single application of about ¼ gallon per square yard can be made with same results, although it takes more time for curing. After the emulsion has hardened sufficiently, brush a light coating of portland cement over the surface and barricade from traffic for about 24 hours. The pitch emulsion will protect the underlying surfaces from deterioration by oil and gasoline drippings.

This type of work should be done only in warm weather, and if the construction details are followed closely—good results can be obtained.

Where serious base weakness is evident, a 1½ inch (or thicker) binder coarse mixture is used, covered with a 1-inch sheet-asphalt wearing surface. This binder mixture is laid to such thickness and number of courses as the weakness and the irregularity of the old pavement requires, but seldom averages over 2 inches.

Many times feather-edged courses of binder are used to true up the old surface preparatory to laying a course of uniform thickness. When Methods III and IV are used, it is necessary to raise manholes and catch-basins to conform to the new grade, as this resurfacing is carried from curb to curb.

Costs and Estimated Life of Methods

The saving in Method IV, wherein a substantial thickness of resurfacing with hot-mix is used, over the cost of stripping off the old asphalt surface and replacing it, is quite substantial. The saving over tearing out the old pavement, base and all, and rebuilding an entirely new pavement, is very great. The cost and estimated average life of the different types of resurfacing are:

Patching and conditioning old pavement preparatory to resurfacing:

1946 ..... 3c per sq. yd.
1947 ..... 4c " " "
1948 ..... 4.5c " " "

Method I—Consisting of seal coat treatment, using high penetration asphalt, or emulsified asphalt, and precoated sand—

1945 ..... 9c per sq. yd.
1946 ..... 9c " " "
1947 ..... 13c " " "
Estimated life—4 years

Method II—Consisting of bond-coating the old surface with emulsified asphalt and constructing a ⅝-inch sheet asphalt surface, using a comparatively soft asphalt—

1947—41c per sq. yd.
Estimated life—8 to 10 years

Method III—Consisting of 1-inch regular sheet asphalt top on 1-inch "fine graded binder," including bond coat—

1947—$1.05 per sq. yd. (Where binder course was increased to 1½", cost was $1.38 per sq. yd.)
Estimated life—15 years

Method IV—Consisting of 1-inch regular sheet asphalt mixture constructed on 1½ to 2½ inches standard coarse-graded binder—

1947—$1.30 per sq. yd.
Estimated life—18 to 20 years

Method V—Consisting of stripping off the old 3½-inch asphalt surface and replacing it with new 3½-inch surface—

$2.40 per sq. yd. (1947)
Estimated life—20 to 25 years

Method VI—Consisting of taking out the old pavement, base included, and replacing with entirely new pavement, such as minimum 8-inch concrete base, and 3½-inch asphalt surface—

$6.50 per sq. yd. (1947)
Estimated life—20 to 30 years

The resurfacings described can be repeated as the wear and tear on them may justify. Where heavier resurfacing is completed, it is hoped that the lighter courses frequently can be used in repeat operations in later years. In considering the estimated life, we should take into account that the method selected is based on the stage of deterioration of the old pavement, as well as the traffic conditions.

If Method II is used on an old pavement where Method III should have been used, we could not expect so long a service life. Generally, Methods I and II have been used only on residential streets carrying a small amount of truck traffic, while Methods III and IV have been used on heaviest traffic streets throughout the city.

Pavement has been resurfaced with 1-inch sheet mix on 1-inch fine binder mix. Resurfacing is omitted near gutter and feather-edged to produce good crown.

Financing Municipal Public Works

More liberal grant-in-aid program and revamping of the realty tax advocated *

By JESSE BURKHEAD
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IT IS not at all surprising that municipalities throughout the country are becoming increasingly concerned about the prospects for capital-improvement projects. Public-works outlays were sharply curtailed during the war. The normal additions to recreation facilities, sewerage systems, water works, streets, and schools were delayed, although the need for such facilities continued at its normal and sometimes at an increased pace. At the end of the war, local improvement projects continued to be restricted by materials shortages and rising construction costs, and, of course, by financial considerations. In addition, there has been some pressure to hold down the level of public works—federal, state and local—during the last three years in order to avoid contributing to inflationary pressures.

Changes Since the War

The year 1949 seems to have ushered in a somewhat different setting than that which has prevailed since V-J Day. Construction materials are no longer in short supply; construction costs have receded slightly. The recent "disinflation"—to use Dr. Nourse's ingenuous phrase—has stimulated interest in local projects as a means of maintaining a high volume of local construction activity and local employment. Unfortunately, for most municipalities the financial problem remains, and in many instances has been intensified.

Those citizens who are now arguing for a higher volume of local capital-improvement projects have a case which is difficult to oppose. For the last several years much-needed local projects have been relegated to a secondary status, and the current budgetary pressure for higher salaries for municipal employees and school teachers and the increased costs of current municipal and school-district operation have taken precedence. The volume of capital projects has, of course, increased in recent years, but in most municipalities such projects have not yet made up the deficiencies of the war years nor expanded to meet new post-war requirements.

Furthermore, one of the arguments for postponing local public works is no longer taken as seriously as during 1947 and 1948. In those years it was often contended that local works projects must be postponed until construction costs receded to pre-war levels. Today there are very few economists or engineers who anticipate that such cost levels will be attained in the next several years. A decline of 10 or 20% is within the range of probability, but not a return to pre-war construction prices.

A word might be said in passing about the growing pressure for local public-works projects to forestall or alleviate the recent and growing unemployment. Such projects are not the efficacious cure for local unemployment which is sometimes contended. Unemployed textile workers cannot always construct city streets. A local sewerage project will make very little contribution to jobs for machine-tool workers. In short, the growth in unemployment which has been experienced since last fall is the beginning of what may be a national problem, not a local problem. This, of course, does not mean that local projects cannot make a contribution to maintaining a high level of local purchasing power with a corresponding higher level of income and employment. But it would be hoped that the communities would not exhaust their financial resources, as they did in the Thirties, in an attempt to handle a problem which must, if it reaches serious proportions, admit only of federal solution.

For the immediate future it would appear that those sponsoring local capital-improvement projects will necessarily compete with other claimants for the current municipal budget. Larger federal grants for local projects (other than housing, perhaps), are certainly not in view, and very little aid, apart from education and health, can be expected from state governments, which have their own capital improvement programs. This makes the financing of local public works a part and parcel of the current, much-publicized municipal revenue crisis, with one important difference — the possibility of borrowing for local capital projects. No sensible budget officer would contend that higher teachers' salaries or higher operation costs in the city hall should be met by a bond issue, but the advocates of capital improvements can logically contend that they have a much stronger case for borrowing for projects which are expected to return a flow of benefits to the community over a period of years.

In their appraisal of municipal borrowing, most students of local finance are very much haunted by the specter of the Thirties, when the municipal-revenue crisis—and we had one then, too—was induced in considerable part by excessive debt creation. One could not lightly recommend a repetition of that experience. Take the case of Philadelphia, for example. Even with the postponement of municipal improvements during the war years, and the additional financial assistance from the Philadelphia income tax, 11% of the 1946 Philadelphia budget was devoted to interest on general debt obligations.[1] The corresponding figure for Syracuse for the current fiscal year (the financing problems here are admittedly less complex) is six-tenths of one per cent.[2] For all cities in the United States over 25,000, interest on general debt accounts for about 4 per cent of general expenditures.[3]

Over a period of years the amount available for local improvement projects will be substantially greater if there is no extensive recourse to debt creation.[4] It would be very difficult to argue that Philadelphia's experience should be widely duplicated.

If debt creation offers no great and immediate hope, it follows that the

* Address to Upstate New York Public Works Forum, sponsored by American Public Works Association, Syracuse, New York, May 3, 1949.

1. Bureau of the Census, *Compendium of City Government Finances in* 1946, p. 26. Interest on enterprise debt is excluded.
2. *Budget of the City of Syracuse, N. Y.*, pp. 3, 55.
3. *Compendium of City Finances in* 1946, p. 5.
4. Federal debt creation stands on a very different basis, of course, from local (and state) debt operations. Not only is the market for federal debt sustained by the operations of the Open Market Committee of the Board of Governors of the Federal Reserve System, but in addition, the federal government may, under certain circumstances, have recourse to direct financing through the Reserve Banks at nominal interest rates. Such avenues are not open to state and local governments.

financing of local capital-improvement projects must depend heavily on current revenues. This makes the financing of public works a part of the general municipal-finance "crisis." . . .

Emerging Conclusions

A few conclusions have emerged from the plethora of discussion. First, there is agreement that no *general* solution is possible. The municipal-revenue crisis takes on different forms in different communities. There is a crisis in Philadelphia. There is a crisis in Los Angeles, there is a crisis (or at least a problem) even in Milwaukee. But community problems are different, the revenue needs and revenue sources are different, and a solution for Los Angeles or Philadelphia is not a solution for Milwaukee.

A second conclusion which has emerged is that there is almost irreconcilable conflict in this area among the ends to be served and the goals which are supposed to guide government financial policy. For example, it seems almost impossible to secure larger school-district revenues without recourse to a higher volume of state aids. But this means an inevitable transfer of authority to the state capitol and an undermining of responsible home rule. Similarly, if home rule and local fiscal responsibility are to be maintained, taxes must be assessed, levied, and collected on local income, property, and sales. But in practice this means abandonment of concepts of ability to pay in the tax structure, since the only productive levies which are available to local units in New York State are those which are regressive, and impose heavier tax burdens on low income groups than on middle and upper income groups. In short, it is not possible in practice to satisfy the requirements of home rule and progressive taxation at the same time. If the fact that we are attempting to pursue completely conflicting objectives were more generally understood, it might be possible to carry on discussion of municipal finance problems with a little less emotion.

The financing of local public-works projects, apart from the limited possibilities for borrowing, must be met within the framework of a solution to the general financial needs of municipalities. The general solutions which are available are four in number: (1) shared taxes, (2) grants in aid, (3) transfer of governmental function to higher levels (centralization), and (4) the utilization of non-property tax revenues at the local level. The possibilities and limitations of each of these have been explored often; nothing would be gained by re-examining these solutions here. It may be noted as an aside that the expansion of local non-property tax revenues has not been the panacea which was originally hoped. At least in New York State, the cities outside New York City have been most reluctant to adopt permissive levies, and when adopted, have been most anxious to repeal them. It looks now as if Syracuse, for example, were about to indulge in that almost unique experience of abandoning a revenue source (the sales tax) that has been extraordinarily productive.

Instead of re-examining the arguments for and against the traditional solutions to the municipal revenue crisis, it might be useful to look briefly at (1) a variant of the grant-in-aid program, and (2) the possibilities of strengthening the property tax.

Grant-in-Aid Program—A Suggested Variant

The variant suggested here is merely an accentuation of a trend which is already in evidence. It might be desirable to shift school districts wholly away from dependence on the property tax, and transfer their financing to the state. It is true that this would encroach upon local fiscal responsibility; authority would inevitably be shifted in the direction of Albany. But since there is a growing feeling that education is a state-wide responsibility, and since grants-in-aid for educational purposes are financing an increasing proportion of school-district expenditures, perhaps it would be wise to go the whole way. If school districts were denied access to property taxation, and if the revenue thus freed were made available to municipalities, the municipal-revenue crisis would be met for the immediate future. In Syracuse, for example, such a step would make available increased municipal revenue of about $3,500,000, which is equivalent to 17% of the current budget.[5]

Under this arrangement, the additional state funds required would presumably be raised through personal-income taxation, which would necessitate lowered exemptions and steeper rates. This is admittedly not a popular solution but one which is certainly more equitable in terms of family income than the permissive levies in New York State which a number of cities now utilize. Furthermore, this solution would have the advantage of providing additional municipal revenues within a system of state aids which is already in operation and under which local need can be measured with a fairly high degree of precision. It would be difficult to establish a state grant-in-aid system for the financing of local needs for recreation or streets since local needs for these services and local ability to finance them vary so widely.

5. *Budget of the City of Syracuse*, p. 3.

The second possibility which may be offered is a revamping and strengthening of the local property tax.

During the Thirties it was an accepted fact that the property tax had reached its limit in many, many communities. The mounting trend of delinquencies was undeniable evidence. It is not at all clear that the property tax is at its limit to-day. Market values have risen sharply and assessed values have signally failed to keep pace.

This does not mean that real-property assessments should be raised to current market prices, with tax rates remaining the same and a corresponding upward adjustment in local government expenditures. But it certainly points to the fact that the "limits" of property taxation should be re-examined in the light of the current and prospective economic situation. Assessments and equalization must be related to the only tangible evidence of value which exists—current market value, or, for some property, capitalized income value. Equity in administration cannot be achieved by basing assessments and equalization on some hypothetical normal value which is subject to the speculative fancy of the assessor or administrator.

Bringing property assessments back to a definable relation to current market prices may require recalculation of statutory tax limits. It will surely require re-assessment in many local taxing districts. It will be expensive and is likely to meet with much taxpayer opposition. But the results achieved should more than offset the disabilities which such a program should impose. There is considerable existing inequity in present assessments, since certain classes of property have increased much more sharply in market value than other classes of property and present assessment procedures fail to reflect these differentials.

It would be hoped that the reform in property taxation suggested here would produce a somewhat larger volume of revenue with little corresponding taxpayer hardship. Whether this would actually be the case must await further extensive investigation and difficult and expensive research. One of the most unfortunate consequences of the zealous local search for additional sources of revenue is that it has turned attention away from improvement in existing revenue sources. It is easier for a municipality to adopt a local sales tax or to lobby for additional state aid than it is for the municipality to engage in the expensive and politically unpopular step of reforming property taxation.

It is trite, but probably true, that local government cannot continue to exist in a vigorous and healthy form if local tax institutions cannot be continually revamped to bring them in line with changing economic conditions.

PETOSKEY, MICH.

New Diesel Plant Is Almost Noiseless

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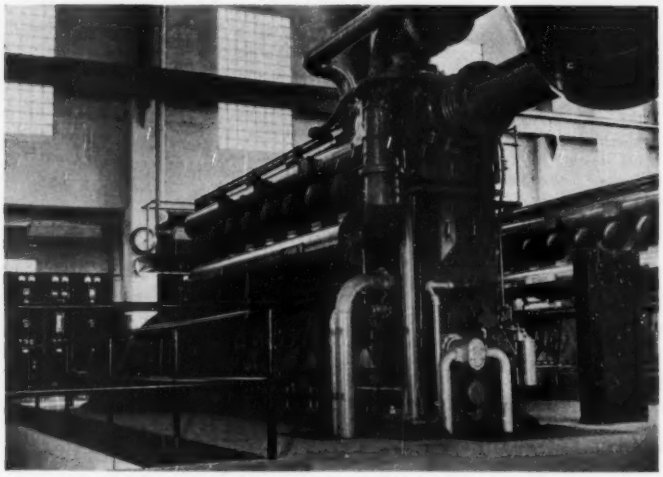
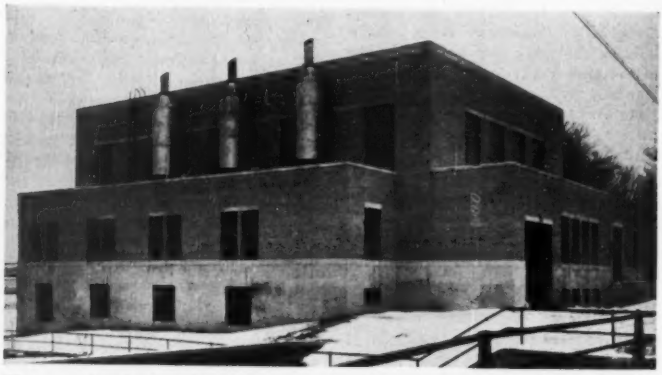
THE recent completion of the new municipal diesel-electric generating plant at Petoskey, Mich. (population 6,019, 1940 census), marks that city's greatest forward step in the development of its electric utility. Apparently, Petoskey was one of the pioneers in the use of electricity, since old records indicate that electric street lights were first turned on there in 1886. Early participation in things electrical was by cooperation with owners of privately developed water-power sites on Bear River.

Three separate hydro-electric stations were constructed from 1917 to 1933; all are still in operation. The combined name-plate rating of these plants is 900 kw. In 1926, arrangements were completed to purchase energy from Petoskey Portland Cement Company to help meet the growing demand. This source was satisfactory until, in 1945, the cement company advised the city that all available power would be needed in its plant.

Arrangements were started in 1945 to purchase energy from the Michigan Public Service Company. That company had limited generating facilities to supply its system load and limited its stand-by service to 750 kw. Experience later resulted in demands in excess of 1,200 kw under that contract.



Three new diesel engines like these are the prime movers in the new plant.



The new diesel plant has silencers and architectural features that make the engine noise less noticeable than the rippling of the brook flowing nearby.

Studies Show Plant Need

It had been apparent for some time that Bear River hydro-generation possibilities were short of the requirements of the city, and that the available purchased power was not adequate. In July 1946, the City Manager made an engineering report on the electric power situation. He recommended additional city-owned generating facilities with either steam or diesel prime movers, with preference shown for steam. The report also recommended that consulting engineers be retained to study and criticize the report, and to proceed with a design of an electric generating station. The City Council, acting on his recommendations, retained our firm to proceed. Our further study showed the desirability of a diesel-electric station. And the city agreed to proceed on this basis.

Contracts for equipment were awarded in June 1947. Construction of the building was started in November 1947, and although construction was suspended for three months because of material deliveries, the project was completed in December 1948. The site selected for the plant was part of a city park just across Bear River from the lower hydro plant.

Owing to the plant's location adjacent to a residential district and waterfront park, the building was designed with the intent of maintaining a pleasing appearance and of keeping exterior noise to a minimum.

Maximum utilization of space was made possible by the use of rigid-frame construction and cantilever floor slabs. Rigid frame bents permit better utilization of engine-room height than is possible with conventional roof trusses;

Outgrown hydro facilities are supplanted by modern plant in residential section at Petoskey, Mich.

cantilever floor slabs, as an integral part of the engine foundations and of the surrounding operating floor, give maximum available space for piping and auxiliary equipment.

Individual engine foundations rest on a common mat that was made large enough to receive the foundation for a fourth unit to be added in the future. The opening in the operating floor for a fourth unit was made larger than for present units in the event a larger unit might be installed.

Early installation of a 15-ton Whiting single-motor traveling crane was of advantage in erecting the generators. It will be used for servicing engines and in the future for installation of new engine generator units.

Removable Wall

The north wall of the engine room was constructed of Detroit Steel Products Company's Type "C" insulated steel panels which may be readily taken down and re-erected when power demands require the installation of a fifth or sixth unit.

Existing features of the site permitted placing the basement floor at approximately ground level along the rear of the building. This allowed for a sufficient number of windows in the basement walls for natural lighting.

The substructure, basement walls, and operating floor are of reinforced concrete. Walls for the superstructure are of buff brick backed with cinder block above a glazed tile dado. All windows above the operating floor are of glass block. The roof employs 2-inch Cemex slabs covered with a 1½-inch monolithic concrete slab and built-up roofing of tar and gravel.

The results of the attempt to keep the plant noise to a minimum are gratifying. The combination of glass-block windows, cinder-block interior wall faces, Cemex ceiling and adequate intake and exhaust silencing permit little noise to leave the plant. Exterior noise is actually so slight that one standing on the Lake Street Bridge across Bear River cannot detect plant noises above the rippling of the stream.

Engine-generator units include three 1,440-hp Superior engines manufactured by the Superior Engine Division of the National Supply Company. The engines, four-stroke-cycle, eight-cylinder, super-charged, mechanical-injection units operating at 360 rpm, connect directly to 1,000-kw General Electric alternators with belt-driven 15-kw exciters. Pistons in the 14½ x 20-inch cylinders are oil-cooled. Test curves show fuel rates recorded on trials and indicate better-than-guarantee performance. One motor-driven Quincy air compressor takes care of starting requirements for the units. One engine-driven Quincy air compressor was installed for emergency starting. Each engine is equipped with a Maxim MU 3 exhaust silencer and a Maxim VH intake silencer.

The cooling system employs raw water from the penstock to the lower hydro plant. This water cools lubricating oil and jacket water through the use of two-pass Bell and Gossett Company heat exchangers. Zeolite-treated jacket water (leaving the engines) is kept at 160° F. by the use of an air-operated diaphragm valve in the raw-water supply line. Two jacket-water heat exchangers installed in parallel permit inspection and maintenance of either one. Each exchanger is capable of handling cooling for a minimum load of 4,000 kw. Each engine has an individual heat exchanger for cooling lubricating oil.

An emergency raw-water system employs a vertical turbine pump taking suction from a well sump at the mouth of Bear River. Failure of pressure in the raw-water line from hydro penstock actuates a pressure switch which starts the emergency pump. Return of pressure to the normal raw-water supply turns off the emergency pump.

One 600-gpm and two 1,200-gpm Worthington pumps were installed on the jacket-water circuit. These ratings are for 95-foot head; all three pumps have shut-off heads of 120 feet.

Building Heat

Building heating is supplied from engine-jacket heat. Jacket water, maintained at a constant outlet temperature of 160° F. is circulated through projection heaters in engine room and shop, and through coils incorporated in a hot-blast system for heat distribution to offices, shower room, lobby, and basement. Both hot-blast system and projection heaters are equipped with controls for either automatic or hand operation. The hot-blast system is equipped with an inside air inlet to permit recirculation and with an outside air inlet to allow using the system for summer air-conditioning.

Fuel-oil storage facilities for the plant include four 25,000-gallon underground steel tanks. All oil piping terminates in a pump building near the tanks. Unloading facilities are provided for both rail and truck delivery. Fuel oil is supplied to engine day tanks by automatically controlled gear-type Roper Corporation transfer pumps located in the basement of the plant. Fuel-transfer pumps take suction from a common suction line which terminates in the pump building at the storage-tank suction header.

Switchgear

The new G. E. metal-clad switchgear for control of 2,400-volt power consists of a synchronizing panel, three diesel-generator sections, and a station-service section. The old G. E. metal-clad switchgear consists of three hydro-generator sections, a totalizing panel, five distribution sections, and one spare section. The control panels for the old switchgear were removed from the Public Utilities Building to the new plant and were connected via multiconductor control cable to the same switchgear sections as before. The spare section was previously used for the incoming feeder of the private power company.

Busses of the new and existing switchgear were connected by a pair of 750-MCM, lead-covered, 5,000-volt cables per phase.

Bus-tie circuits, multiconductor control cables, and miscellaneous circuits were installed in an interbuilding duct system which was placed underground except where it crossed the river. The duct system consists of 4-inch Transite ducts encased in concrete for the entire length, including a river crossing on steel WF sections. Extra ducts were installed for future needs when it may be necessary to increase bus-tie cables.

Costs

Complete cost of the plant, including engineering fees for design and resident supervision, was $593,551.14. Costs were met by a general-obligation bond issue in the amount of $470,000 and from current funds of the electric-power department.

Although this cost, which amounts to slightly less than $200 per installed kw of generating capacity, appears excessive, it must be borne in mind that space was provided for a fourth unit and that the cooling system and major piping are ample for any anticipated expansion.

Water-Works Men Outline Fluoridation Procedure

THE attitude of the water-works industry toward the application of fluorine to the public water supply as a method of counteracting tooth decay among children was outlined in a special report issued by the American Water Works Association at its annual meeting in Chicago last month. Dr. A. P. Black, professor of chemistry, University of Florida, and this year's president of the Association, read the report. It stated that:

"In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and the state health authorities and others responsible for the communal health, the water departments or companies may properly participate in a program of fluoridation of the public water supplies."

Sanitary engineers prefer the term "fluoridation" to "fluorination" since the customary practice is to use the more easily handled sodium fluoride rather than fluorine gas. Dental studies indicate that when the fluoridation is present in concentrations of 1.0 to 1.5 ppm. the children's teeth show a 50% to 60% reduction in the incidence of tooth decay.

The AWWA report notes present evidence that fluoride-treated water will produce dental benefits. It recognizes that all epidemiological evidence is presumptive and that its value depends on the amount and kind of data submitted.

In the past, the water-works industry has been able to offer fully tested treatment methods. However, public demand for the fluoridation treatment and its expected benefits has arisen prior to the completion of technical studies. The report gives guidance to water-works men in those communities demanding adoption of the treatment now. It classifies the communities into two categories. These are:

A. *Experimental.* Covers cities that add sodium fluoride to the water and compare the dental health benefits with a "control" city, similar in size and in its type of water supply. The work must be under the supervision of trained technical personnel. Examples are Grand Rapids, Mich.; Newburgh, N. Y., and Evanston, Ill.

B. *Empirical.* Covers communities that wish to give their children anticipated protection in advance of experimental results.

The Association report expressed a desire for further experimental studies by communities in different climatic and geographical locations. The report stated that climate may have a direct bearing on the concentration of fluoride required.

For those contemplating such treatment, the report offered these recommendations:

1.00 ***Handling Requests for Fluoridation of Water Supply***

.1 All requests that fluoride be added to the water supply for the reduction of the incidence of dental caries, which is a public-health matter, should be referred to the state and local public-health authority.

.11 The water utility is charged with supplying water meeting standards adopted by the controlling health authority. In the case of fluoride a maximum concentration of 1.5 ppm. of fluoride ion may be permissible.

2.00 ***Responsibility for Fluoridation of Water Supply***

.1 Any decision to add fluoride to a water supply should be concurred in by the following authorities and agencies before there should be any commitment by the water-supply utility.

.11 The local health department.

.12 The state department of health.

.13 The local dentists or dental society.

.14 The local medical society.

.15 The local municipal governing body, board, or council.

.16 The approval of the state public utility commission may also be necessary in case of a privately owned utility.

.17 A ruling from the state attorney general. Obviously only one such ruling will be required for each state.

3.00 ***Liability Involved***

.1 The water-supply utility may be liable for damages caused by the fluoridation of a water supply when such chemical is added without specific authorization from controling health agencies.

.2 The water-supply utility may be liable for damages caused by negligence in the application or control of the addition of fluoride. Negligence might follow the application of not enough, as well as too much, fluoride.

4.00 ***Steps in Authorization of Fluoridation of Water Supply***

The operating management of a water-supply utility should begin the addition of fluoride in the water supply only after:

.1 The governing body of the municipality has authorized, by ordinance, and the local and state health authorities have approved the addition of fluoride and have:

.11 established reasonable maximum and minimum limits of fluoride, stated in parts per million, to be maintained in the water supply,

.12 approved the type of chemical-feeding equipment to be installed and used,

.13 approved the installation of equipment, plant layout, and methods of handling the fluoride compound to assure the safety of employees,

.14 approved the method of analysis and control to be used in determining the fluoride content of the water before and after the addition of fluoride.

.2 The state public utility commission has released, in such instances as may be required, any necessary orders, e.g., a method by which the utility will be reimbursed for the expense of fluoridation.

.3 The legal counsel of the water department or company has made a finding that all necessary authorization has been given to the water utility so that legal liability for damages will be limited to negligence.

.4 The board of directors or similar governing body of the utility shall have, by resolution, instructed its proper operating officers and employees to add fluoride as specifically authorized by the controlling health and municipal authorities.

5.00 ***Disposition of Cost of Fluoridation***

.1 Fluoridation of a water supply will increase the utility's operating expense and investment cost. The total cost will probably range from 5 cents to 15 cents per capita per year, depending upon the amount of fluoride in the supply before fluoridation, the size of the community, and the per capita use of water.

.2 The method by which the cost of fluoridation will be defrayed should be determined before the water utility agrees to the treatment.

.3 Where any authority, such as a public utility commission, has jurisdiction over accounting procedures and water-rate charges, the necessary order from such authority should be obtained.

.4 The cost of fluoridation should not be charged to the cost of water-works operation, since the benefits to be derived by the consumer bear no relation to the amount of water used. While the mehods of assessing these charges upon the consumer will vary in individual cases, the idea should be kept in mind that this cost of fluoridation is a proper charge against the cost of communal health activities.

6.00 ***Items of cost***

.1 Investment costs. The probable fa-

cilities and equipment required to add fluoride are:

.11 Storage room. This room may have to be separate from the storage space used for other chemicals, particularly if containers are opened in this room, due to the toxic nature of the chemical. Special ventilating equipment may be required.

.12 Feeding equipment.

.2 Operating costs. The several operating costs are:

.21 Cost of the fluoride, including freight,

.22 Handling labor or stores cost,

.23 Operating labor costs,

.24 Equipment maintenance costs,

.25 Laboratory control costs.

.26 Additional insurance costs, if the legal counsel of the water utility finds that the fluoridation of the water supply may subject employees to occupational disease hazards and the utility to possible damage suits.

.27 Investment overhead costs:

.271 Depreciation expense on structures and equipment,

.272 Interest or return on investment,

.273 Taxes, if any, on assessed value of structures and equipment.

7.00 ***Application of Fluoride***

.1 Application of fluoride must be made through accurate feeding equipment. Either gravimetric or volumetric dry-feed equipment or positive-displacement liquid-feed equipment with an accuracy within 5% is required.

.2 Special precautions must be taken to protect the operators from inhaling fluoride dust when charging the hoppers of the feeders. It is recommended that dry feeders be equipped with dust collectors consisting of bag filters operating under positive air pressure and vented to the outside. Each operator who handles fluoride should be provided with his individual toxic dust respirator to be used only when handling the chemical. Where liquid-feed equipment is used, at least two solution tanks must be available for preparation and storage of the fluoride solution.

8.00 ***Control***

.1 Laboratory analysis and control should follow specific instructions from the controlling health authority.

.11 Sampling points shall be before and after fluoridation and from one or more points in the distribution system as determined by the controlling health authority.

.12 Frequency of sampling shall be determined by the controlling health authority.

.13 Method of determining the fluoride content of the water shall be specified by the controlling health authority, and shall be in agreement with the latest edition of *Standard Methods for the Examination of Water and Sewage.*

.14 Results of all chemical tests shall be recorded on forms approved by the controlling health authority and by the legal counsel of the water utility. Water samples for chemical analysis shall be submitted to the state health authority at stated intervals for control purposes.

.15 The tests for the purity of the fluoride chemical used in water fluoridation shall have the approval of the state health authority. These tests shall include the *U. S. Pharmacopoeia* tests for heavy metals (*U. S. Pharmacopoeia*, XII, page 720).

British Movie Explains the 'New Town'

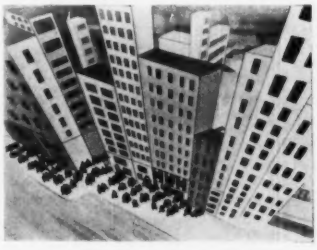
A SHORT and humorous technicolor cartoon, "New Town," produced for the British Ministry of Town and Country Planning, has been made available for showings in this country by planning and civic groups through offices of the British Information Services.

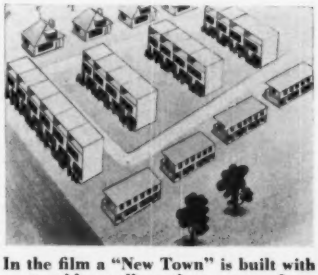
The film features "Charley," who represents the average Briton in a series of cartoon films produced by the Central Office of Information to explain new British legislation and keep people informed about the latest developments.

Tired of unpleasant living conditions, Charley decides to turn town-planning theories into practice. Cycling along the spacious boulevard of a new town, he conjures up a picture of the way things used to be—a long, uncomfortable bus ride to work, drab homes, and smoky streets. Then he tells how he and his friends decided to put things right by planning and building a new town. The plan of Stevenage is used, passing incognito by appearing upside down.

16mm sound prints of this nine-minute film may be rented for $2.50 from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y.

"The Proud City," a three-reel, 26-minute film about the plan for rebuilding London, which was produced in 1947, is suggested as a possible partner to a "New Town" showing, to round out a program on planning. It can be rented for $3.75.





In the film a "New Town" is built with no trouble at all, as these scenes show.

Trade Mart Attracts Latin American Commerce

TWELVE Latin American nations and Puerto Rico will be the newest occupants of New Orleans' International Trade Mart and with their occupancy the non-profit, civic-sponsored establishment will become completely leased.

Nicaragua and El Salvador already have signed leases with the Trade Mart, and the final leases from Colombia and Haiti are expected to be completed soon. Meantime, arrangements are being made for Trade Mart space by Ecuador, Venezuela, Panama, Cuba, the Dominican Republic, Puerto Rico, Peru, Costa Rica and Honduras.

The governments of Belgium, Guatemala, and Czechoslovakia already occupy space, and with completion of other leasing arrangements the Mart will house offices and exhibits of products for a total of 16 foreign governments in addition to displays maintained by more than 90 domestic and foreign business houses.

Acquisition of the new Latin American tenants was a direct result of a 10-week, 15-nation tour begun in March by Clay Shaw, managing director of the Trade Mart, and Mario Bermudez, director of international relations for the City of New Orleans and International House. The trip was sponsored jointly by the Trade Mart, International House, the City of New Orleans, and the Board of Commissioners of the Port of New Orleans.

M unicipal
P ublic
R elations

The City Tells Its Story

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

Three Municipal Reports And Their Significance for MPR

THERE is now more than just a realization that something drastically different ought to be done in the production and distribution of annual municipal reports. We are getting action.

The years of way-showing by the International City Managers' Association, during which ICMA has sought for simplicity, brevity, and eye-appeal, and the continuous encouragement in THE AMERICAN CITY of good work where it came to editorial attention — these are starting to pay off. And the growth of Municipal Public Relations as a consciously practiced operation of municipal government is playing an important role in achieving these dividends.

I have not hesitated to give considerable space in this column to annual reporting. It is a major phase of MPR. The MPR man during the year skillfully carries out his program in the process of dramatizing city government for the people and humanizing municipal operations. All of this, in a way, is epitomized in the annual report—in its compilation, production, and presentation to the public. The publication of the report itself offers a real opportunity for a wide range of MPR action—if the report is to become a vital, living thing.

Three Things Required

Of course, you have to have a story to tell—or there's no point in putting out anything more than the legalistic municipal documents which may be necessary by law. Then, you have to have the determination, the all-fired will, to tell the story. And, lastly, you have to have the skilled means of telling it and putting it over.

The comparative rarity of topflight municipal reports is due to the rarity of these three requirements in combination. But it may not be many years before their existence will be quite common.

A modern municipal report, if it does anything, should make the local John Q. feel pretty darned stuckup about his town: eager to have it move ever forward, proud to pay its taxes, ready to help it whenever he can, always talking about it.

An annual report should *talk*—and it should make talk. (But how many do?).

Well, way down yonder in New Orleans they have a real story to tell. Mayor deLesseps S. Morrison largely has been making that story. He's been determined to have the New Orleans story told (and it's already gone into papers and magazines bit by bit all over the country) and he has the skilled means of telling it—in the person of David R. McGuire, Jr., Director of Public Relations, and his staff.

What can you do with a modern annual report? How can you get the most out of it? Let Dave McGuire, in his own words, tell you what he and his staff have been doing to capitalize upon the New Orleans municipal report.

A Life-Like Report

A picture report following the format of *Life* dramatically illustrates municipal progress in New Orleans during the past 12 months.

The 36-page, 9x12-inch brochure, which, the *New Orleans States* noted, de-emphasizes "brass," was issued by Mayor deLesseps S. Morrison as his third annual report.

To obtain maximum coverage, the city public relations department, which produced the report, timed its release the day before the third anniversary in office of Mayor Morrison's administration. Photos, copies of drawings illustrating public improvements, were placed on city desks in advance.

Are your fasteners STYMIED by high freight rates?
Then try the ROCHESTER plan!
SELLING BUSINESS A CITY . . .
PUBLIC RELATIONS

A page from the Rochester report.

This resulted in page-one spreads on the eve of the anniversary. The next day, in the Commission Council before a large crowd (invited by letter and public notice), Mayor Morrison delivered a 30-minute review of the year which covered both the printed report and some intangibles which could not be photographed.

Six radio stations carried broadcasts of the meeting. Radio page ads summing up these programs also invited taxpayers to call or write for copies of the printed report. Many did.

The newspapers, which had also been supplied with advance copies of the verbal presentation, carried additional page-one spreads on the second day. This time, the emphasis was on the new material read in the Council chamber — home rule and necessity of cooperation between municipal and state governments.

The press services, which had been supplied with copies of the printed and mimeographed presentations, saw state-wide interest in these quotes. Hence, stories were filed which appeared in most of Louisiana's 25 dailies.

Then for the state weeklies, a two-page summary of the mimeographed report was mailed out with a 3-column layout of the three best pictures and the booklet.

Meanwhile, as favorable editorials were appearing in the New Orleans daily newspapers (copies of everything had gone direct to editorial writers)—the neighborhood publications were not being overlooked.

They were serviced with special stories and art work on the report, stressing the areas served by these papers.

Finally, for the benefit of those who missed the original radio broadcasts, the report was reviewed on the mayor's weekly radio program several days later. Television presentation of the report is now being prepared utilizing about 200 photographs, some of which could not be used in the report because of space limitations. This is believed to be the first instance of a municipal report being depicted on television. The program is scheduled by WDSU-TV in the near future.

Copies of the printed report were mailed to every beer parlor, library, dentist, druggist, and barber of New Orleans. Business men and merchants who saw and liked the report are now considering underwriting a reprint of 10,000 copies for mailing to their friends and customers.

Most people agree that maximum information to the public on the affairs of municipal government is a vital necessity. However, such mass information does not occur spontaneously or by accident. It is the result of meticulous planning, as shown by this single illustration of how to get the most out of an annual report.

Note particularly two things in these paragraphs from Dave McGuire: (1) the last paragraph, and (2) the statement that the annual report is being televised. Possibly in a later column an account can be given on the televising of the New Orleans story. As to the italicized paragraph, the work of the MPR man and his staff — the accomplishment — is a clear demonstration of the importance of official MPR.

You of the smaller cities may pipe up and say at this point that that's all right for New Orleans and the big cities but you can't go in for such operations. On the contrary, you really can, if you're determined, put over something like this on a scale commensurate with your size and your pocketbook. Gains for the small city can be great, too.

The point that many small cities are missing is that MPR can do just as much for them, proportionately, as for large cities—if, as, and when they are ready to go ahead, willing to budget for MPR in a modest but adequate degree, and to take advantage of expert assistance.

From Seattle, Wash., in a small item on the second page of the city's tabloid annual report, published as part of the *Seattle Times* on May 23, comes the gist of the thing as to the why and wherefore of brief, readable reports.

"Need More Information on City Departments?" is the head of a three-paragraph note which simply states that people who want more details than given in the tabloid can get it at City Hall. The various departments, by law, make annual reports and these are on file for inspection.

Few — very few — persons will give much heed to page after page of municipal-report type. Most of them will heed—if it isn't too much of a chore. Therefore — the brief, pictorialized report, such as this one. And the more pictorialized, the better-written the copy —the more attention the report can command.

The first example that I know of in which MPR is recognized in a municipal report with a section in its own right, appears in the Rochester, N. Y., annual, a 32-page two-color brochure entitled "Looking At Your City."

This significant special treatment of the MPR function is heartening and is another example of realization growing to the point of action. Harold S. Rand is the MPR man. He has received national recognition for certain phases of his work and his MPR activities have been an important factor in city development.

AMPRO Launched; Services Being Developed

LEADERS in the movement for organized action in spreading the practice of municipal public relations as a local-government operation, including members of the Governing Board and others vitally interested, met on June 17 at the Town Hall Club in New York City to launch officially the Association of Municipal Public Relations Officers.

During the all-day session, presided over by Harold S. Rand, Public Relations Officer of Rochester, N. Y., a constitution and by-laws were adopted; the group of twenty men from widely scattered parts of the U. S., heard Harold S. Buttenheim, Editor of THE AMERICAN CITY, welcome the new organization to the municipal field in a challenging luncheon address, and the course for the ensuing year was set in a program of activities and services.

Details of the meeting will be reported in the August issue of THE AMERICAN CITY but, briefly, AMPRO's program will include: A publication devoted to the field of MPR; information service on MPR and MPR personnel; MPR case histories and monographs for working use; an MPR library including bibliographies, film lists, radio scripts, visual aid material; model ordinances; publications information, and advisory service to members.

The program set by the Governing Board will be developed gradually, but it was pointed out that the scope and effectiveness of AMPRO services to MPR men and municipalities will increase with demand as reflected in membership growth.

RESURFACING

GRADE SEPARATIONS

Building of 7 Overpasses, 17 Underpasses Will Save Time, Lives

A two-page spread from the New Orleans report.

Greenwich, Conn., Controls Dutch Elm Blight

Sanitary maintenance and mist spraying with DDT insecticide checks the disease that has been taking heavy toll of American elms

By JOSEPH A. DIETRICH
Superintendent of Parks and Trees
Greenwich, Conn.

MANY communities like our own have faced this question: Must we lose our historic American elms to the dreaded Dutch elm disease? Our forefathers, with practical thoughts of the future and a personal appreciation of the trees, adorned our New England countryside with the elms that have expressed the atmosphere of this part of the country.

The answer to this important question is "no" for those of us who have lived with the disease and have been able to profit by the exhaustive work of our scientists and arboriculturists.

Civic Problem

The greatest blame for the continued loss of the elms lies not with the scientist or the tree man, nor with the individual property owner, who is openly concerned and grief-stricken at the thought of losing even one of his trees. The property owner in particular works hard and spends much money to protect his trees. The greatest fault frequently lies with the town and city government that fail in their duty to set an example for protective action.

Appropriations for the care of trees usually are so minute that even the minimum of maintenance cannot be undertaken. The ridiculousness of this attitude is even more evident when one realizes that it costs less to apply proper care to a tree than to have it removed as the result of negligence.

In dollars and cents, the real-estate value of the trees is well recognized. One can only pity the New England towns that face the possibility of their loss, not only in historic beauty but in lower tax revenues because of depreciated land values. There are exceptions, of course, and failure to recognize the excellent job being done by some of our towns and cities would be most unfair.

Greenwich Tree Policy

In Greenwich, Conn., a town covering 48 square miles and having a population of less than 40,000, the townspeople have preserved the natural beauty of the country landscape and, through the interest of the citizens as taxpayers and of garden clubs and other horticultural groups, the care and preservation of the tree population in this town has become an important item. Sufficient funds are annually appropriated to see that adequate and competent personnel and equipment are available.

The healthy record of municipally owned trees has been most gratifying both to the municipal officials and the townspeople themselves. Of particular note has been the control and partial eradication of the Dutch elm disease on the town-owned trees. Greenwich was the first town in Connecticut where the disease was discovered. The town went immediately into action, working under recommendations of the U. S. Department of Agriculture and the Connecticut Experiment Station.

The program, followed each year, consisted of removing diseased trees and dead wood—potential beetle-breeding areas—and spraying, pruning, and feeding to keep the trees strong and resistant. In the past couple of years, with the advent of new chemicals (chief among them being DDT, with its lasting residual characteristics) and with the new Lawrence Aero-Mist blower equipment, our department has obtained many interesting findings and excellent control. The drop in new infections is indicated as follows:

1946	186	elm trees infected
1947	114	" " "
1948	51	" " "

The spray program during 1948 was accomplished for experimental observations. As can be noted, the results have

This elm gets a protective treatment of DDT from a Lawrence mist-blower.

really been most encouraging indeed.

To determine the effectiveness of a dormant DDT-spray program on the control of the elm-bark beetle, carrier of the Dutch Elm disease, plots of 50 to 100 trees were selected for this work. These trees averaged 24 inches in diameter and ranged from 50 to 75 feet in height. The first plot was sprayed on April 6 with 8 pints of 12.5% emulsifiable DDT commercially prepared. The other groups were sprayed with DDT of the same strength, using 5 pints, 3 pints, 2 2/3 pints, and 2 pints per tree. Commencing on May 20, twig samples were collected from the top, center, and the base of trees selected at random from the sprayed plots. These twigs were put into glass containers and a certain number of bark beetles released in each one. In addition, to check the findings, one container with beetles and unsprayed twigs was set up for each group of jars.

A summary of the findings would seem to indicate that in the case of sprayed twigs receiving 5 to 8 pints of spray material per tree, no feeding scars were noted, and the beetles were dead within a day. In the case of the unsprayed twigs, used as a check, the beetles fed vigorously, disappearing from sight in crotches and living as long as six days. In the case of applications below the 5-pints-per-tree figure, similar results are indicated, excepting that shallow feeding scars were noticed in a few instances. We further noted that where feeding occurred, the sample had been taken from the field side of the highway. We found further that when beetles were released in a jar containing a sprayed twig and an unsprayed twig, feeding took place only on the latter.

Time Factor Tested

Another series of tests were run to determine the period of time that beetles are affected by the sprayed surfaces, once exposed to them. Beetles were allowed to remain in jars with sprayed twigs for periods starting from one hour up to three hours; then they were removed to containers of unsprayed twigs. Those exposed for only one hour seemed unaffected and lived and fed for six days. One remained alive for 10 days.

The effects after exposure for over one hour are similar to those found in the other tests. The beetles lived for about one day.

Further observations were made on the activity of the beetles upon emerging from beetle wood. A period of inactivity, lasting up to one hour, was typical. Following this, the beetles became very active and did considerable exploring and traveling over all sections of the twigs before settling down to feeding. It was perhaps due to the period of inactivity that no results were obtained on the one-hour contamination test.

We noticed further that control seemed present from April 6 until June 9, even with periods of heavy rains following the initial application of the spray. As noted previously, we used a Lawrence Aero-Mist sprayer for the work, using both an 0.063-inch nozzle and an 0.086-inch nozzle.

Observations of the various plots during the remainder of the season has indicated that the trees sprayed with the heavier application of material showed no new outbreaks of the Dutch elm disease. The aphid population was heavy, and some red mite were present. Conditions for these pests were excellent this season and were also noted in heavy outbreaks in areas where no DDT spraying was undertaken.

In areas of lighter application, scattered outbreaks of Dutch elm disease appeared as usual, though not on as large a scale as was apparent in other sections of the state.

It was also observed that about 85% of all elms which broke out with the disease showed symptoms in the tops and on the field side of the tree, indicating that in the areas of light application, insufficient time spent at each tree resulted in poor coverage.

In answer to the question, "Will we lose our elms?" it is "yes" if we lack interest in their maintenance and have a defeatist frame of mind. It is "no" if we continue to give our precious heritage the care and attention which they so well warrant.

Sufficient evidence is available to indicate that if a well-organized plan of attack is mapped out, many elms can be saved. This plan should include scouting and elimination of contaminated areas; protection of all elm trees by proper removal of dead and weakened wood; a spray program designed to prevent feeding by the elm-bark beetle, and also to eliminate leaf-eating insects, which cause defoliation and result in weakened trees, and a feeding project to invigorate the trees and thereby make them more resistant to attacks from insects and diseases.

Congress Acts to Preserve Character of Greenbelt Towns

A FEDERAL law relating to the disposition of the "greenbelt" towns —Greenbelt, Md., Greendale, Wis., and Greenhills, Ohio—enacted by Congress in May (P. L. 65, Ch. 127), helps to assure that the original character of the projects will be maintained, and that they will not be "sold out" for private speculative development.

These towns, which were built in the period from 1935 to 1937 by the Resettlement Administration partly to provide constructive work relief and to increase employment, are unique in that each of them is protected and surrounded by a green belt of park and forest land. In the original developments, there were a total of 2,264 dwelling units. These are principally in row-type and apartment-type buildings of masonry construction, though in Greendale, Wis., 48% are single-family structures.

In 1941 at Greenbelt, Md., construction was begun on an additional 1,000 dwelling units under the war-housing program (Lanham Act). Tentative plans for potential development of the three towns indicate that provision could be made for a total of 13,510 dwelling units, or almost four times the present number. The extensive community facilities were also planned with expansion in mind. At Greendale, for example, the existing water-supply facilities, sewage-disposal plant, and incinerator plant could serve almost three times the present population.

The general purpose of the new legislation is to authorize the Public Housing Commissioner to dispose of the projects by means of negotiated sale, without competitive bid, at the fair market value as determined by him on the basis of an appraisal by an independent real-estate expert, on terms and conditions the Commissioner determines to be in the best public interest. The bill requires that first preference be given to veteran groups organized on a non-profit basis, such as in cooperative-housing associations or limited-dividend corporations. Present tenants in the greenbelt towns are protected, as they are entitled to become members and enjoy all the privileges of any such non-profit groups which may be formed.

The legislation gives a green light to an active veterans' group in the Milwaukee area which is desirous of purchasing Greendale and expanding it from 572 dwelling units to a project with a capacity of 3,500 units.*

Sen. Paul H. Douglas of Illinois aided in the final drafting of the bill, with the advice and assistance of Clarence S. Stein, town planner, of New York, and helped to secure its enactment.

* For further information on Greendale, see the following articles in THE AMERICAN CITY: "Greendale and the Future," by Clarence S. Stein, June 1948, p. 106, and "Veterans Seek Purchase of Greendale and the City of Milwaukee Cooperates," January 1949, p. 73.

Arthur S. Tuttle

Jay Downer

Howard S. Braucher

They Left Us a Legacy of Finer Communities

In four fields of municipal and civic activity, recent weeks have witnessed the passing of four leaders whom *The American City* had the privilege of numbering among its long-time friends.

ARTHUR S. TUTTLE

March 26, 1865-May 19, 1949

Mr. Tuttle's professional career dated back to 1884, when he became assistant engineer of the Brooklyn Water Works. The next year he was graduated from New York University with bachelor of science and civil engineering degrees.

In 1897 he began working for the Board of Estimate and Apportionment of the City of New York, and by 1921 had advanced to the position of chief engineer of that body. This post Mr. Tuttle held until 1928, when he became the Board's consulting engineer. In 1933 he became New York State Engineer of the Federal Emergency Administration of Public Works and later State Director of the PWA. More recently he engaged in private practice as a consulting engineer. At various times he held important positions with engineering societies, including the presidency of the American Society of Civil Engineers.

While Chief Engineer of New York's Board of Estimate and Apportionment, Mr. Tuttle contributed an article to the January 1925 issue of THE AMERICAN CITY on "Sidewalk Arcades for Traffic Relief," the opening paragraph of which reads as follows:

"A method of providing roadway space for vehicular traffic in the congested sections of cities, to which adequate consideration has not yet been given, is through the installation of sidewalk arcades. On some of the northerly and southerly arterial streets in the borough of Manhattan, it would be practicable, with sidewalk arcades, to substitute eight in place of four moving lanes of vehicular traffic or, in other words, to double the present street capacity and thus to secure much-needed traffic relief at a cost far below that which we would obtain through any other method."

Mr. Tuttle's article was illustrated with reproductions of six foreign examples of arcaded sidewalks. Perhaps his advice still merits consideration by the City Planning Commission and the recently appointed Traffic Commission.

Lent D. Upson

LENT D. UPSON

Nov. 5, 1886-May 9, 1949

Dr. Upson was one of the earliest leaders in municipal research to cooperate with THE AMERICAN CITY in its youthful, struggling years. As director of the Dayton (Ohio) Bureau of Municipal Research from 1912 to 1915, he was much interested not only in the technical efficiency of municipal administration, but also in interpreting to the public some of the problems and achievements of city government.

Indications of such interest are to be found in Dr. Upson's articles, in the issue of December 1912 on "Cincinnati's First Municipal Exhibit," and in the issue of December 1915 on "Dayton's Exhibit of City Manager Government."

As director of the Detroit Bureau of Governmental Research from 1916 to 1944, and since then as dean of Wayne University's School of Public Affairs and Social Work, Dr. Upson earned acclaim as the political conscience of Detroit. To quote the *Detroit Free Press* of May 12, 1949:

"Dr. Upson was recognized as one of America's foremost political scientists.

He was a scientist in the most accurate definition of the word. He was never a carping critic of local governmental procedures. Instead, he was objectively constructive, seeking always a better way to do things which would lead to more progressive, economical and efficient government."

HOWARD S. BRAUCHER

July 19, 1881-May 22, 1949

A graduate of Cornell University, Mr. Braucher became a worker for the Church of the Covenant in New York in 1903, and for the Madison Square Church House in 1904. Beginning in 1905 he served for four years as secretary of the Associated Charities in Portland, Maine, and in 1909 joined the staff of the Playground and Recreation Association of America. As secretary and later as president, he gave four decades of able leadership to that organization and its successor, the National Recreation Association.

During the first World War, Mr. Braucher was secretary of the War Camp Community Service, and from 1922 to 1940 he added to his other duties the chairmanship of the National Social Work Council.

Early in the history of THE AMERICAN CITY—in the April 1913 issue—Mr. Braucher contributed an article entitled "How to Aid the Cause of Public Recreation." In that article he stressed—as the National Recreation Association has repeatedly done over the years—the importance of efficient leadership and supervision for public playgrounds. It was Mr. Braucher's opinion, as expressed in this article, that the work of a recreation system headed by a recreation secretary is not less difficult than that of a school system headed by a school superintendent.

During the 36 years that have intervened, great strides have been made both in the provision of space and equipment for parks and playgrounds in cities, towns, and villages throughout the United States and in the training and employment of competent recreation leaders. For inspiring and guiding much of this progress, our American communities owe a deep debt of gratitude to Howard Braucher and the National Recreation Association.

JAY DOWNER

June 3, 1877-May 30, 1949

In the early years of the Bronx River parkway project and of the development of the Westchester County park and parkway system, Mr. Downer wrote two articles for THE AMERICAN CITY—the first in his capacity as engineer and secretary of the Bronx Parkway Commission, and the second as chief engineer of the Westchester County Park Commission. These articles were entitled "Reclaiming a Polluted River" (Issue of January 1920) and "County Park Development and Regional Planning" (May 1925).

Besides working on the parkways, Mr. Downer supervised the $11,000,000 county beach and amusement park at Rye, N. Y., called Playland, and the $1,200,000 Westchester County Center at White Plains, N. Y.

In 1940, Mr. Downer received from New York a contract for the planning and construction engineering work at the Idlewild Airport. Later he formed the firm of Downer, Green & Carillo, which continued the work. Since his retirement about a year ago the successor firm of Carrillo & Green Associates has been completing the contract.

As a young man, Mr. Downer worked with the United States Engineering Corps on improvements of the Upper Mississippi River, was employed by the engineering department of the Chicago, Milwaukee & St. Paul Railroad and was chief engineer of the Cape Breton Railroad, N. S. Later he was resident engineer at Massena, N. Y., of the Aluminum Company of America, engaged in mill construction and power canal projects.

Somerville Students Compete In City Planning

WITH the endorsement of Mayor G. Edward Bradley of Somerville, Mass., and of Monsignor James H. Phelan and Superintendent of Schools Everett W. Ireland of that city, the James A. Logan Post, V.F.W., has conducted a three-phase competition, the purpose of which was to give to the students in the public and parochial schools of Somerville an opportunity to express original ideas on the problems of modern city planning.

Students of public speaking, English literature, and architectural drawing were asked to submit to a committee of judges their studies and ideas on municipal planning based upon individual research on planning problems suggested by the contest officials.

The winning students, guests of the sponsoring organization, were presented their awards at the annual banquet of the Logan Post on April 9, in the Hotel Vendome, Boston. The panel of judges had selected three winning students within each of the contest classifications —"Oratory," "Essay," and "Planning and Analysis."

The Prize Winners

Miss Nancy Foster, senior at St. Joseph's High School, Somerville, won the first prize in the contest's Essay division. In her prize-winning essay Miss Foster was both critical and hopeful of her community:

> Somerville, once one of the residential prides of suburban Boston, has become an eye-sore — congested, run-down, and extremely slovenly. As future citizens of Somerville, it is the privilege and the duty of the high-school students to aid the civic-minded and far-sighted men who wish to make Somerville a "surging city." Our city abounds in natural potential beauty spots. It is well and centrally situated. A river flows by its back door; it is built on ten hills; it contains business, industrial, and residential sections. That man-made beauty can improve Somerville is demonstrated in at least two sections of our fair city, Prospect Hill Tower, and Powder House Park.
>
> In our scheme in advanced planning we must think of the traffic problems in Somerville; we must talk of constructing overpasses and under-passes; we must act to change our city into a suburban haven—a place of peace, beauty, and enjoyment.
>
> When we are planning in advance, we must have safety, ease, and service as our watchwords. We must strive to make Somerville a pleasant resort, instead of its present state, a "last resort."

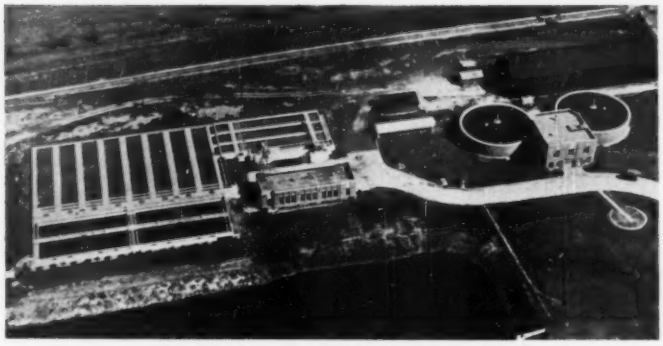
The interest of Somerville's businessmen toward the competition was demonstrated in their presenting to Miss Anna Havlin, junior student in St. Joseph's Parochial High School, the Somerville Chamber of Commerce trophy for first honors in the oratorical phase.

Somerville's chief executive presented to Edmund Passmore, a senior in the Somerville High School, the Mayor G. Edward Bradley trophy for his excellent entry that brought him first place in the architectural-drawing phase of the competition. This was a plan for the construction of a vehicular overpass to solve a major traffic-congestion problem at the junction of Northern and Washington Streets — two main highways leading a heavy stream of traffic from Boston to points north. Contestants placing second in the three groupings of the contest were: Miss Beverly O'Brien, sophomore at St. Joseph's High School, essay phase; Donald Curran, senior at Somerville High School, oratorical phase; Kenneth Taylor, senior at Somerville High School, architectural phase.

All other students who participated in this Logan Post civic activity were presented commemorative medals of honor. Throughout the competition those who served as judges in each of the contest phases were greatly impressed by the research, preparation, and attention to detail manifested in the material submitted by the students.

Digester Design Improvements

Marion, Ind., sewage-treatment-plant operation shows need for better-located sampling points, easier means of emptying the digester and some way to keep the undigestible products from filling the digester



An aerial view of the Marion, Ind., plant.

By D. P. BACKMEYER
Superintendent of Water and Sewage Utilities
Marion, Ind.

IN SEWAGE treatment as commonly practiced today, digestion is supplementary to the primary task of removing solids from the sewage. The task of the digesters is to reduce the volume of these solids and render them less of a nuisance.

Nevertheless, in plants like our own, where by-products of digestion play an important part in the plant operation, good performance of the digesters is as important as any other phase of the work. And the close attention we have had to pay to them has led us to certain recommendations that we feel would make them operate better.

Sampling Points

Sampling points in the digesters provide one example. Samples taken from the conventional devices located in the tank covers may not always give an accurate picture. In our digesters, a continuous ledge at the periphery prevented taking samples where they would have furnished the most valuable information.

Again, certain types of material found in both garbage and sewage are decomposed or digested very slowly, even in properly operated digestion tanks. Suitable provisions should be made to control this type of material inside the digester.

Provision also should be made so that tank bottoms can be kept clean. Digestion efficiencies as measured by volatile-solids reduction may be lowered as much as 15 to 20% when accumulations of grit, trash, and non-digestible matter are permitted. Engineers should provide pumps and drainage lines so that digestion tanks can be completely emptied.

Of course, one should recognize that some maintenance investment in cleaning and inspecting the digesters always is warranted. The Marion plant handles both sewage and garbage solids. The average per-capita-per-day loadings have been 0.234 pounds for garbage, and 0.330 pounds of dry sewage solids. The garbage figure is on a "green" or wet basis. Actual dry solids are 15% of the wet.

During the first 88 months of operation, the digesters supplied 150,000,000 cubic feet of gas that was turned into power. In all, 26,643,000 pounds of dry sewage solids and 2,236,500 pounds of dry garbage solids have been handled by the digesters. In all fairness, the digesters have worked well.

Treats Garbage and Sewage

The Marion sewage- and garbage-disposal plant is nine years old this summer. Its treatment is built around the activated-sludge process. Both sewage and garbage solids are digested in separate heated digestion tanks. The capacity of the plant is 4,500,000 gallons per day. The population served is 30,000. Garbage-grinding facilities were included in the original design. The digesters provide gas used by Climax gas engines. These provide the power to operate the Roots-Connersville blowers used in the aeration process and to do a certain amount of pumping. Thus the digesters make the plant almost self-sufficient.

Digester Capacity Lost

Operation records first indicated difficulty in 1947. Although the organic load applied to the digesters remained constant, the volatile solids in the digested sludge increased from 43.8% to 54.5%. The total solids content of the finished sludge took a corresponding drop from 4.75% to 2.82%. These facts suggested that some type of dense material was accumulating inside the digesters.

However, routine samples taken from the conventional lines did not support this. Inspection showed about 30 inches of top scum under the roof of the primary digester. No top scum was found in the secondary digester, and no unusual grit deposits could be detected on the floor of either digester by sampling through the cover sampling ports with a special self-closing type of sludge-sampling device. Nevertheless, these procedures did not entirely satisfy our curiosity, and in January of 1948 we planned a program of completely draining and cleaning both of the tanks.

This necessarily entailed by-passing some sewage to the river, and the subsequent fouling of both the primary settling and the activated sludge tanks. As there was no sludge-storage lagoon, it was necessary to drain one digester into the raw-sewage wet well; the sludge solids then could be pumped to the primary settlers. The raw-sewage flow into the plant was partly by-passed while the digester solids were being pumped to the primary tanks.

The plan adopted entailed the draining of the secondary digester first, the transfer of the contents of the primary digester directly to the secondary, and the final cleaning of the primary settling tanks by pumping back into the primary digester.

The secondary digester was drained by gravity as far as possible, and then

the sludge pumps were used to finish cleaning the portion that remained. It was in the removal of this "portion that remained" that we encountered our difficulty.

Both of the digestion units are identical in design. Each tank is equipped with P.F.T. Company floating-cover and gas-collection appurtenances. After the cover was lowered to the ledge, the inspection dome was opened and the remaining contents were completely purged by pumping in air from two blower units.

Thick Residue Found

On first inspection, we discovered a mass of thick, jelly-like matter still on the tank bottom. The liquid volume of the tank had been completely removed without affecting this material in the least. We tried refilling the tank with water and emptying it again but the jelly-like residue remained practically intact. The water added had simply flowed over the deposit without exerting any solvent action at all.

This inspection showed the value of personally getting inside the tank and looking around. Had we not done so, we would not have seen this mass of "jelly." Very little cleaning would have been accomplished by merely removing the liquid in the tank.

Laboratory Analysis

Several buckets of this material were taken to the laboratory and analyzed. The consistency of this deposit was such that it would almost retain the shape of the container from which it was poured or removed. Some samples showed a solid content of 22%. The vol. sol. content was 37.9%.

Fire-Hose Flushing

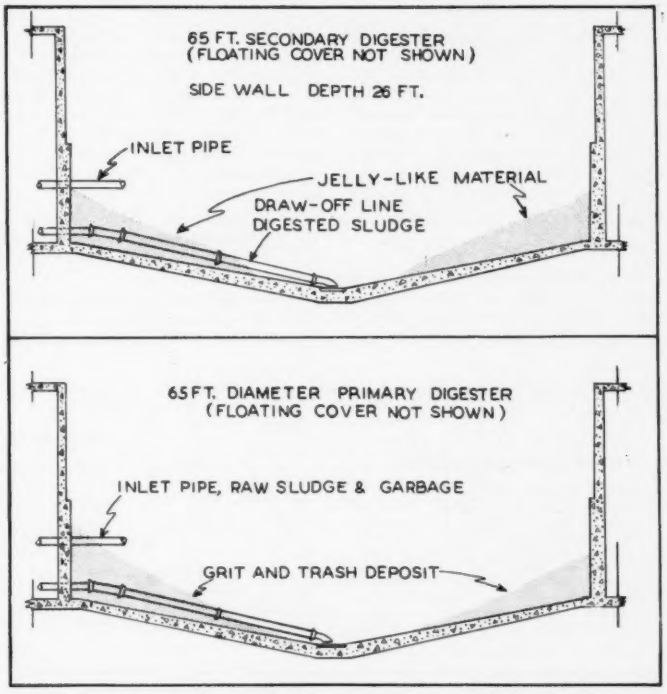
A surface film that seemed tough in texture prevented disintegration and solvent action by continued flushing with water. In order that this material might be worked to the center draw-off sump, the fire hose was again connected and fitted with a ¾-inch pressure nozzle. By having two men operate the hose at full stream pressure it was possible to literally slice off this unusual muck and dilute it to such an extent that would permit its being pumped by the double-piston plunger pump. This pump consistently drew a 15-inch vacuum while handling the material, and we were certainly thankful that a plunger pump was available to do this job. After four days of plugging away with the fire hose, the last of the mess was finally removed. The possibility exists that this jelly-like residue developed several years ago when sludge elutriation experiments were in progress. At that time we used the secondary digester for the sludge-concentration unit.

As soon as the cleaning of the secondary digester tank was completed, the primary digester was emptied into the secondary. A considerable deposit of dense solids was also found on the floor of this tank after the liquid portion was removed. The material found was of two distinct types: (a) a thick layer of trash having a specific gravity lower than the liquid content of the tank, this material having been in the form of a top-scum, and (b) a deposit on the floor 10 feet deep in places, this matter having settled out of the liquid portion of the tank contents.

The top scum accumulation contained fibrous material from garbage, together with hair and other slowly digestible matter found in the sewage. The deposit on the floor contained sewage grit, fine sand, water-soaked match sticks and wood chips, all of which could have originated from the sewage, together with bone chips and slivers, crushed peach pits, egg shells, ground glass, various kinds of seeds, and variously shaped small metal scraps, this latter conglomeration having as its origin the ground garbage.

The heavy, gritty mass was packed to a depth of 10 feet directly beneath the raw-sludge inlet line. To transfer the gritty matter to the center sump from which it could be pumped required the use of the fire hose and pressure nozzle. Shovels were also used to dig out the more compact layers, which showed considerable resistance to the high-pressure water stream. The wrought-iron heating lines were cleaned by playing the direct fire stream on the pipes at close range. The encrusted scale of these lines was ⅛ to ⅝ inches thick, but it was not difficult to remove, and was formed mostly on the top section of the pipes. (The circulating water temperature has never been above 130° F., and heat transfer to the sludge was still satisfactory at the time the cleaning was done.) The greater part of the gritty matter flushed out of the tank was pumped from the raw sewage wet-well directly to the plant-effluent ditch and thence to the receiving stream.

The digesters are now performing well and they probably will continue to do so for the next four or five years. I do not wish this to be a criticism of the designers who laid out our plant. They gave us a plant that works well and provides a high degree of purification. I hope, however, that our experience will contribute to the knowledge of digesters, so that future plants can perform even better.



This shows that the accumulations of undigestible material in the bottom of the digester reduce the tank capacity.

LOWER MERION TOWNSHIP USES MAILING CARDS FOR

Simple and Systematic Building Inspection

By **JESSE L. STETLER**
Superintendent
Building Regulations Department
Lower Merion Township
Ardmore, Pa.

A DEPARTMENT of building code administration, to be efficient and thorough, must employ a system of inspection and inspection procedure which is simple, uniform and complete.

In its efforts to develop a system of speedy and efficient inspections, Lower Merion Township, Ardmore, Pa., is using a simple set of mailing cards which provides for uniform and complete inspection, automatically schedules inspections, and serves as a combination inspection checklist and permanent inspection record. Inspection is predicated upon specific stages of construction and recognizes five important periods. When a building permit is granted, five cards indicating these five construction stages are issued for each structure to be erected. Each card is addressed to the Lower Merion Building Department. The back of each card has a space for location and permit-number identification and requires check entries for each item to be inspected in the stage of construction to which the card is applicable. The builder must return the proper card to the Building Department for each stage of construction reached, in order that the inspection may be made at the proper time. Each card is of a different color to indicate to the inspector at a glance the types of inspections he has scheduled each day. The inspector files the cards by date as they are received and they automatically provide him with a simple inspection schedule.

How the Cards Are Used

In the first inspection, the inspector checks conformity to zoning regulations. He notes the location of the structure to be built, the front- and rear-yard depths, the side-yard widths, the dimensions of the structure and type of building, and confirms whether these items conform to the plans filed with the application for the building permit. He checks each of these items on the white card which has been returned to him by the builder, enters the inspection date and any remarks he may wish to make, and signs the card. The card is then placed in the applicant's folder in the Department's file. These procedures are followed in each of the following inspections.

The second inspection establishes the condition of the excavation. The inspector observes the nature of the soil, notes whether the ground is solid or fill, and determines whether the soil has the proper bearing value for the structure it must support. He checks these items on the yellow card returned to him by the builder.

The third inspection deals with the foundations. The card requests an inspection when not more than 10% of the work is completed. In this inspection, the footings, character of wall materials, thickness, composition of mortar, and the quality of workmanship are checked. A green card is used for this inspection.

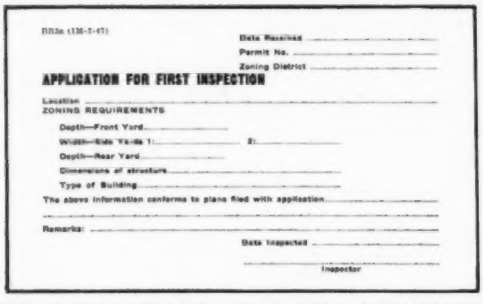
Fourth inspection.—When the structure is ready for plastering, the builder mails the orange card to the Department of Building Inspection. This inspection covers the thickness and materials of the exterior walls, the adequacy of mortar used, the framing of the structure, and the compliance with the building code for member sizes, sills, plates, joists, beams, lintels, and girders; and observes the quality of materials and the manner in which the materials are assembled.

The fifth, or final, inspection is made after receipt of the beige-colored card, which requires that the inspector check over the finished structure to observe that it has been completed in accordance with plans filed and that no structural changes were made since the previous inspection which might alter the characteristics of beams, girders, bearing walls, or partitions.

Each inspector has a supply of red reinspection cards. A red card is used in cases where the inspector, during any of the five regular inspections, finds that any item is not in conformity with the building code and directs the owner or builder to make the necessary corrections. The card is used any time the inspector feels that alternate or additional inspections are required.

Cards Provide Record; Determine Daily Schedule

All these cards are placed in the applicant's file, as each inspection is completed, and together they constitute a complete and itemized record of inspection for each structure. The system also provides a daily working schedule for the inspector and eliminates unnecessary traveling and loss of time. The effectiveness of the system is attested by the fact that two field inspectors make a total of 700 to 800 inspections monthly. These inspectors are frequently required to perform inside duties for several days of each month, which reduces the time for field work.

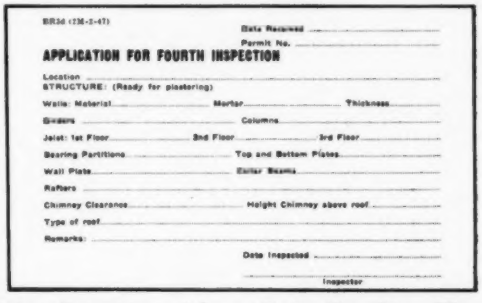


BR3a (136-7-47)

Date Received .....
Permit No. .....
Zoning District .....

APPLICATION FOR FIRST INSPECTION

Location .....
ZONING REQUIREMENTS
Depth—Front Yard.....
Width—Side Yards 1:..... 2:.....
Depth—Rear Yard.....
Dimensions of structure.....
Type of Building.....
The above information conforms to plans filed with application.....
.....
Remarks: .....
Date Inspected .....
.....
Inspector



BR3d (136-8-47)

Date Received .....
Permit No. .....

APPLICATION FOR FOURTH INSPECTION

Location .....
STRUCTURE: (Ready for plastering)
Walls: Material..... Mortar..... Thickness.....
Girders ..... Columns.....
Joist: 1st Floor..... 2nd Floor..... 3rd Floor.....
Bearing Partitions ..... Top and Bottom Plates.....
Wall Plate..... Lintel Beams.....
Rafters .....
Chimney Clearance..... Height Chimney above roof.....
Type of roof.....
Remarks: .....
Date Inspected .....
.....
Inspector

Two of the set of mailing cards used in the Building Regulations Department of Lower Merion Township. When a builder is ready for an inspection, he mails in the appropriate self-addressed card, which the inspector later fills in and files.

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Accessory Uses in Residential Areas—Churches and Fire Stations

CALIFORNIA. *Corporation of Presiding Bishop of Church of Jesus Christ of Latter day Saints* v. *City of Porterville*, 203 Pacific (2d) 823 (California District Court of Appeals, March 17, 1949).

TEXAS. *City of McAllen* v. *Morris*, 217 South Western (2d) 875 (Texas Court of Appeals, December 1, 1948).

Zoning regulations for residential areas usually permit several non-residential uses which are accessory to the predominant residential use. These two cases involve rather extreme attempts to keep such uses out of a one-family area. The question of protecting one-family residential areas from any other type of building invariably generates a highly emotional atmosphere; yet, since large areas of many American cities are zoned with such restrictions, the exclusion of accessory services raises serious problems.

In the California case, the Porterville zoning ordinance provided for four residential districts. The first was limited to one-family houses, and the second also permitted two-family houses. The third also permitted apartment houses, hotels, boarding houses, clubs and fraternities, and hospitals. In the fourth the regulations also permitted libraries, museums, schools, and churches. In the present case a religious corporation sought permission to build a church and religious school in the area restricted to one-family residences, and argued that there was no justification for excluding churches on any ground of public health, safety, or welfare. The Court upheld the ordinance as valid, in an opinion which contained some fine tributes to the American home.

In upholding the exclusion of churches from the one-family residential district, the opinion maintained a fairly consistent confusion regarding three separate issues:

1. The creation of purely residential districts, excluding business and other non-residential uses.
2. The creation of a purely one-family district, excluding apartments, and
3. The exclusion of churches from a one-family district.

The first question, of course, raises no substantial question. As for the creation of a one-family district, the Court noted the existence of a division of authority on the subject, but pointed out that the California courts have tended to approve such a district, chiefly on the basis of paeans to American home life. So far as such restrictions serve to exclude bulky apartments from such areas, such regulations, of course, constitute perfectly proper prohibitions against spotty over-development—which brings congestion, takes light and air, creates extra burdens on municipal services, and tends to blight other land nearby. But, as this Court pointed out, if such regulations can validly exclude two-family houses—which obviously have none of the above disadvantages—there is no reason why they should not be able to exclude churches. Moreover, in passing on the third point, the Court also emphasized a possibility that a church might create traffic and noise—admittedly proper subjects of concern for a zoning regulation.

The Court also held that the exclusion of churches from three of four of the residential districts did not infringe on freedom of religion. No examination was made as to what percentage of the city's area was involved.

In the Texas case, the city wanted to build a fire station in a district restricted exclusively to one-family residences. The city first sought an exception, but failed by one vote to get the necessary concurrence of four members of the Board of Adjustment. The city's legislative body then passed an amendment exempting from all the restrictions of the zoning ordinance all municipal buildings "deemed necessary . . . for the safety, health and general welfare of the public." In the opinion the Court upheld this amendment as reasonable in view of the city's responsibility for providing protection against fire.

While the amendment as passed seems unnecessarily broad, it is rather difficult to argue that a city has no power to locate fire stations in any specified area. Admittedly a fire station could be rather a nuisance in any residential area, depending a good deal on how it is constructed and run. However, in view of the huge areas of many American cities which are zoned for one-family residences, in many situations it may be necessary for public safety to place a fire station in such an area.

Accessory Uses in Residential Areas — Real-Estate Brokerage Office

ILLINOIS. *Village of Riverside* v. *Kuhne*, 335 Illinois Appeals 547, 82 North Eastern (2d) 500 (November 16, 1948).

A real-estate broker bought a house which was situated in a one-family residential zone, but right next to the boundary of a business zone. In addition to living there, the broker used part of the house for his office, and put up two business signs in the front yard to attract customers. A prosecution was instituted and the broker was convicted for violation of the residential zoning restrictions, and he appealed on the ground that his real-estate brokerage business constituted a profession and a home occupation, accessory to the residential use of the premises.

The Court held that real-estate brokerage was to be regarded as a business, incompatible in a residential area—and so was neither a home occupation, customarily incident to residential use of the premises, nor a profession. Particular emphasis was put on the use of business signs, which were admittedly necessary for the operation of the business.

Railroad Spur in Residential Area — Eminent Domain

TEXAS. *Forth Worth and Denver City Railway Co.* v. *Ammons*, 215 South Western (2d) 407 (Texas Court of Civil Appeals, November 1st, 1948).

In 1927 the railway company purchased a strip of land for a spur track in the city of Lubbock, Texas. When the local zoning ordinance was passed in 1941, most of the strip (which had been developed with warehouses) was placed in an industrial zone. However, a three-block section at the further end—formerly outside the city limits, and now situated between two residential subdivisions—was zoned for one- and two-family houses and low apartment buildings. According to the record, there was a single business concern situated beyond these subdivisions. When the railway began to build a spur along its strip of land between these subdivisions in order to serve that company, the residents nearby sought a declaratory judgment to enforce the zoning ordinance and prevent construction of the spur.

The Court held that, since the state had authorized railroads to use eminent domain to obtain land needed for their purposes, a railroad's judgment on what land it needed would supersede any local zoning ordinance. Even if the railway had used eminent domain in this case, that conclusion (in the opinion of the editor of these notes) would not necessarily follow. Moreover, the opinion, if followed through logically, would exempt any industry or utility having the power of eminent domain from the requirements of local zoning ordinances. In a case where eminent domain was not in fact invoked, it seems a little absurd to reach so drastic a conclusion by reciting the need to uphold that power as against localities opposing its exercise.

Exclusion of Junk Yards from Industrial Districts

MISSOURI. *City of St. Louis* v. *Friedman*, 216 South Western (2d) 475 (Missouri Supreme Court, December 13th, 1948).

In the St. Louis zoning ordinance, the regulations for the industrial districts forbade several listed uses, including storage of scrap iron and junk. In this decision the Missouri Court upheld that restriction as constitutional. Moreover an open yard used for removing and selling usable parts from automobiles, and for storing old junked automobiles thereafter for some time until they were removed, was held to be covered by the prohibition.

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Amusement Devices—Validity of Ordinance with License Fees in Amount Greater Than State Tax

In action against city to enjoin enforcement of ordinance requiring license fee for operation of pinball and music devices and separate fee on operators, held that ordinance was invalid since it violated statute prohibiting cities from imposing license fee or tax on such devices in amount greater than state tax. *City of Springdale v. Gage*, 216 S. W. (2nd) 390 (Ark., Jan. 10, 1949).

Annexation—Power of City to Annex Territory Where 75% of Freeholders Are Against

In action by resident freeholders to prevent city from annexing territory, held that notwithstanding more than 75% of freeholders in said territory remonstrated against such annexation, evidence warranted annexation by city, since failure to annex would retard prosperity not only of city but of resident freeholders in territory sought to be annexed. *Loeffler v. City of Louisville*, 215 S. W. (2d) 535 (Ky., Nov. 30, 1948).

Assessments—Street Project—Right of City to Assess Land Owners

Where city condemned land and made special assessments for street-widening project, but owing to war, materials became unprocurable, held that actions of city and state after war showed present intent to continue project, and city could not be deemed guilty as matter of law of inexcusable delay entitling landowners to recover assessments paid during period of delay. *Goodman v. City of Chicago* 83 N. E. (2d) 23 (Ill., App., Dec. 15, 1948).

Bartenders — Women As — Validity of Where Permits Only Wife or Daughter of Male Owner to Tend Bar

Where Michigan statute requires licensing of bartenders in cities having population of 50,000 or more but provides that no female shall be licensed unless she is wife or daughter of male owner of licensed liquor establishment, held that statute does not violate equal-protection clause of 14th Amendment because it permits women to serve as waitresses nor because alleged desire of male bartenders to monopolize the calling. *Goesaert et al. v. Cleary et al.*, 69 S. Ct. 198 (U. S. Sup. Ct., Dec. 23, 1948).

Baseball — City Stadium as Nuisance — Lights, Noise, Parking

In action by taxpayers to enjoin City of Baltimore from entering into agreement permitting use of city stadium for playing of professional baseball, held that use of arc lights and dust from parking lot in present condition constituted nuisances which would be enjoined until properly corrected; however, city had power to enter into contract, non-conforming use under zoning ordinance was proper, and neither city nor lessee could be enjoined on basis of disorderly conduct of individuals going to and from stadium. *Green v. Garrett*, 63 Atl. (2d) 326 (Md., Jan. 13, 1949).

Beer — Validity of Ordinance Prohibiting Sales On Sunday

Where petitioner was arrested for violation of City of Kingfisher ordinance prohibiting sale of 3.2 beer between hours of 12 a.m. on Sunday to 6 a.m. on Monday, held that ordinance was invalid since inconsistent with and contrary to general law of state. *Ex parte Pappe*, 201 Pac. (2d) 260 (Okla. Cr. App., Dec. 15, 1948).

City Attorneys—Right to Salary After Resignation Until Successor Elected

Where city attorney's resignation was accepted by city commission and he subsequently sought to recover salary while holding over until his successor was elected, held that office of city attorney is not required in order to maintain city form of government but could be created or dispensed with at will of city and since attorney's services had not been used during interim, he was not entitled to pay. *Gambill v. City of Denton*, 215 S. W. (2d) 391 (Tex. Civ. App., Nov. 5, 1948).

City Employees — Cost-of-Living Adjustments for

Where charter required Civil Service Board to prepare salary plan for employees and city council adopted proposed plan which provided for cost-of-living adjustment determined from reports published by U. S. Department of Labor, held that employees were entitled to cost-of-living adjustments in salaries as provided in plan without necessity of action by Board. *Dearborn Fire Fighters Ass'n. v. City of Dearborn*, 35 N. W. (2d) 366 (Mich., Jan. 3, 1949).

City Officers — Dismissal Because of Interest in Transaction with City

Where city official of New York City violated charter provision prohibiting officer or employee from being interested in transactions with city, held that penalty of dismissal was authorized by law and appellate division in proceedings to review commissioner's determination, could not alter penalty, even if it believed that it was too severe. *Haslett v. Minetti*, 84 N. Y. S. (2d) 468 (N. Y. App. Div., Dec. 20, 1948).

Dedication — Right of Abutting Owner to Enjoin Use of Public Square For Purpose Other Than Dedicated

In action by abutting owners to enjoin city from converting public square into high-school athletic field and playground, held that abutting owners had right to maintain action in their own names to enjoin use of square for purposes other than for which it was dedicated. *Headley et al. v. City of Northfield et al.*, 35 N. W. (2d) 606 (Minn., Jan. 14, 1949).

Firemen—Pensions—Collection of for Disability from Both City and State

In action by fireman against City of Corning for payment of disability pension, held that since fireman had elected to retire, move from city and receive pension from state for same disability, he was not entitled to pension from city. *Robinson v. Cole*, 84 N. Y. S. (2d) 514 (N. Y. Sup. Ct., Steuben Co., Dec. 6, 1948).

Garbage — Validity of City Contract For Without Competitive Bidding

In certiorari to review city resolution making award of contract for removal and disposal of garbage, held that irregularities in specifications of contract were of such substantial character they operated to effect fair and competitive bidding and contract pursuant to such resolution would be set aside. *Waszen v. Atlantic City*, 63 Atl. (2d) 255 (N. J., Jan. 10, 1949).

Incorporation — Formation of New Town from Old—Apportionment of Assets and Liabilities

Where new town was created out of old town, held that by statute assets as well as liabilities would be apportioned between two towns. *Town of Cassian v. Town of Nokomis*, 35 N. W. (2d) 408 (Wis., Dec. 15, 1948).

Inflammable Liquids — Denial of Permit for Storage of Based on Public Interest

Where petitioner had complied with ordinance regulating storage of inflammable material but town board refused to issue permit for installation of 20,000-gallon fuel-oil tank, held that board acted within its discretionary power in denying permit as being contrary to public interest. *Krumenacker v. Town Board of North Hempstead*, 85 N. Y. S. (2d) 250 (N. Y. Sup. Ct., Nassau Co., Oct. 30, 1948).

Intoxicating Liquors — Validity of Ordinance Regulating Hours

Where defendant was convicted for violation of ordinance prohibiting sale of intoxicants between 10 p.m. and 6 a.m. on weekdays, held in affirming conviction that statute permitting sale of intoxicants from 6 a.m. to 1:30 a.m. did not take away city's power to regulate and control sale of intoxicants within its limits. *City of Maryville v. Wood*, 216 S. W. (2d) 75 (Mo., Dec. 13, 1948). *Reh. den.* Jan. 7, 1949.

Parking Meters — Validity of Ordinance Where Free Parking Allowed at Adjacent Curb

In action against motorist for violation of City of Long Beach parking-meter ordinance, held that provision of ordinance providing parking meters for one side of street only was invalid as unnecessary and unreasonable and is not in furtherance of primary purpose of parking meters to create greater movement of traffic. *People v. Littman*, 85 N. Y. S. (2d) 48 (N. Y. City Ct. of Long Beach, Nassau Co., Nov. 3, 1948).

Public Utilities—Deposit on Connections—Right of Town to Charge One and Not All for

In mandamus to compel town to furnish petitioner with electric current and water service for tent house located within established service zone without payment of $50 deposit on bond, held that since town did not require deposit from others using service in same neighborhood it must make connections and such action did not require formal authorization of town council since such service involved only ordinary connections with existing lines. *Town of Wickenburg v. Sabin*, 200 Pac. (2d) (342 Ariz., Nov. 29, 1948).

Sales Taxes—Business Statistics Reports—Applicability of City's Sales Tax to as Personal Property

In action against New York City to review determination of deficiencies in sales taxes and denial of claim for refund of same, held that sale of business statistics reports issued at regular intervals to investors falls under same classification as newspapers and periodicals and are, under Administrative Code, exempt from municipal tax imposed on sales of tangible personal property. *Business Statistics Organization, Inc., v. Joseph*, 84 N. Y. S. (2d) 591 (N. Y. App. Div., Dec. 20, 1948).

Signs—Validity of Ordinance Prohibiting Erection of Between Sidewalk and Curb

Where city adopted ordinance revoking all permits and requiring removal of advertising signs in space between sidewalk and curb, held that by statute city was authorized to adopt ordinance, notwithstanding non-advertising signs, utility poles, etc., were permitted to occupy such space. *Stringham v. Salt Lake City*, 301 Pac. (2d) 758 (Utah, Jan. 17, 1949).

Recent City Manager Appointments

J. H. BENDER, manager at Clayton, N. M., 1923-27; Duncan, Okla., 1927-30; El Reno, Okla., 1930-33; Clayton, N. M., 1934-43; Tucumcari, N. M., 1946-49, has returned to Duncan, Okla.

J. D. CHEEK has succeeded GEORGE H. GREINER at Cleveland, Okla.

MAURICE W. COCHRAN succeeded HARVEY H. ALLEN at Corpus Christi, Texas.

JOSEPH R. COUPAL, JR., assistant to the executive secretary, Bureau of Governmental Research, University of N. H., is the first manager for Bethlehem, N. H.

GEORGE D. FAIRTRACE, manager at Highland Park, Texas, 1923-28; Wichita Falls, 1928-31 and 1944-49; Fort Worth, 1931-37; Tyler 1937-44, has returned to Tyler.

CARL W. FRANK, city engineer, Winona, Minn., succeeded OSCAR W. HELLMAN at Charles City, Iowa.

RONALD W. GULLIFER is the first manager at Jackman, Maine.

I. C. HECK is manager at Eastland, Texas.

HARRY HEIRONIMUS is manager at South Charleston, Ohio.

GEORGE R. HUBBARD received the appointment at Durango, Colo.

J. PELHAM JOHNSTON, local attorney, received the appointment at Lexington, Ky.

DONALD E. KNECHT succeeded HENRY MOORE at Heavener, Okla.

GEORGE KRANENBERG, assistant park superintendent, has succeeded FRANK H. GOEBEL at Grand Rapids, Mich.

LEONARD H. KYLE succeeded JOHN C. BARKER at Fort Fairfield, Maine.

WILLIAM H. LANGE, engineer at Michigan Chemical Corp., St. Louis, Mich., is the first manager for Norway, Mich.

IRVING C. MCNAYR, acting manager, received the appointment at Montgomery County (Rockville), Md.

ROBERT H. MCGREGOR, finance director, Wayne, Mich., received the appointment at Dormont, Pa.

RAYMOND D. NIXON, superintendent of power and light, was appointed at Trinidad, Colo.

PETER F. ROAN, Wayne, Mich., 1947-49, is the first manager at Mexico, Mo.

CLARENCE E. ROBINSON, manager at Clinton, Maine, 1946-49, is the first manager for Ashland, N. H.

RONALD E .STEWART, student at the University of Maine, received the appointment at Madawaska, Me.

ARTHUR THOMAS, street foreman, is acting manager at Manistee, Mich.

T. E. THOMPSON, manager at Grand Junction, Colo., 1926-30; Shawnee, Okla., 1930-46; Norman, Okla., 1946 to date, will be the first manager for Scottsbluff, Nebr.

FRANK WOOD, of Big Springs, Texas, succeeded GEORGE D. FAIRTRACE at Wichita Falls, Texas.

CLARENCE E. RIDLEY
Director
International City Managers' Association
Chicago, Ill.

Increase of Needless Din Requires Action by Cities

THE need for noise-abatement ordinances in more American cities was stressed by Dudley W. Day, president of the National Noise Abatement Council, in connection with the tenth anniversary of National Noise Abatement Week, May 1-7.

Mr. Day's plea followed a survey of 113 principal cities by Lyle F. Yerges, chairman of the Council's Ordinance Committee.

In a letter to the 113 mayors, Mr. Yerges pointed out that some cities "vigorously and conscientiously" enforce their noise ordinances, while others enforce them at times and forget them at others, and still others have "virtually no effective means to reduce harmful noise." The similarity of existing noise ordinances indicates that the Noise Abatement Council has made definite strides in the right direction.

"In planning noise ordinances," Mr. Yerges said, "public officials should establish the need for such ordinances, their justification, advantages, the mechanics of administration, and the need for public cooperation."

The Council recommends that proposed ordinances call for warnings for first and minor offenders, requests for those creating harmful noises in their business processes to find means of eliminating or reducing them, and arrests and fines for repeated violators, the fines to pay cost of enforcement and not to be used as sources of revenue.

Pointing out the need for public cooperation with administration of noise ordinances, the Council advised: "As experience has shown in many similar matters, the public must understand, appreciate and actually demand law-enforcement activities pertaining to any nuisance. An educational campaign must precede the establishment of an ordinance and must support the initial enforcement efforts until the program has become an accepted part of their lives. Civic organizations can be especially helpful in this campaign, as are the press and radio."

Roster of Sanitary, Public Health Engineers

THE American Public Health Association, in cooperation with the National Security Resources Board, is preparing a roster of sanitary and public-health engineer citizens of the United States. To a great extent, this will bring up to date the roster prepared by the War Manpower Commission. Its purpose is to provide a list of trained sanitary and public-health engineers for use should another national emergency arise.

On July 1, the distribution of questionnaires to be used in gathering basic information necessary for the preparation of the roster was begun. Previous to printing the questionnaire in its final form, a proposed draft was distributed to a hundred engineers as a trial to check its applicability and the clarity of presentation. The final questionnaire has been prepared on the basis of the original one, plus comments and suggestions received during this trial period.

The definition of a sanitary engineer prepared by the National Research Council in 1943 is being used as a basic description of individuals who should receive and complete the questionnaire. Judgment as to whether or not the individual meets the requirements as set forth by the National Research Council in its definition will rest with each individual.

In general, the Council defines a sanitary engineer as one with a degree in engineering from a recognized school, or the equivalent, and who has had specialized training in the fields of public health since graduation. This training should enable him to take responsible charge of design, construction, or operation of projects relating to public health, and to make reports and deliver recommendations on this subject.

Employees Organize In Growing Numbers in Cities

MUNICIPAL employees are organizing in a growing number of American cities. A survey of personnel practices of cities with a population over 10,000 by the International City Managers' Association revealed that 322 cities have one or more local unions of municipal employees affiliated with national AFL or CIO public-employees' unions. Among these cities are 89 of the 92 cities with populations over 100,000.

The survey, which appears in the 1949 *Municipal Year Book*, also indicates that officials from 559 cities reported that their cities had no such union. Of this number, reports from 19 cities asserted that their municipal employees were forbidden to join such unions. Replies from 478 cities indicated that there was no restriction on union affiliation of their municipal employees. The remaining 62 cities without unions did not reply to this question.

Strikes of some or all municipal employees during 1948 were reported by 21 cities among which were Los Angeles, Denver, Buffalo, Gary, Ind., Madison, Wis., and Austin, Minn.

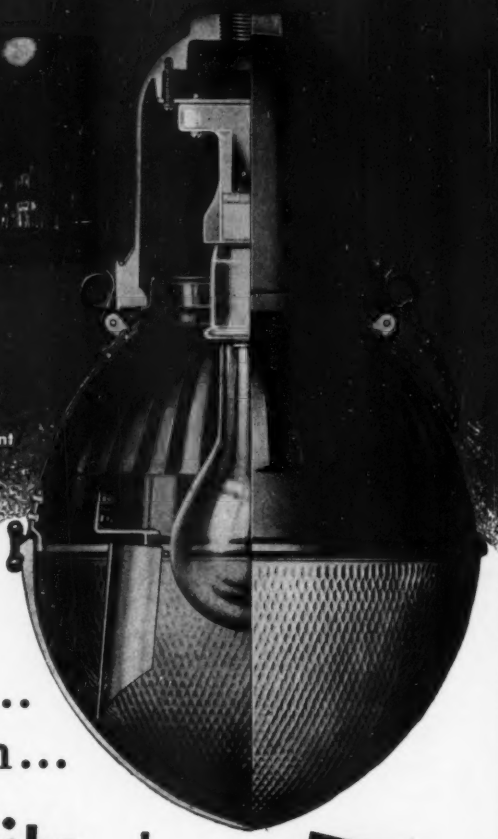
American Federation of Labor affiliates organizing municipal employees are the American Federation of State, County and Municipal Employees and the International Association of Fire Fighters. The United Public Workers of America is the Congress of Industrial Organizations' affiliate within this field.

Five years ago, 104 cities reported to the Association that they had local employee groups not affiliated with the AFL or CIO. By October, 1948, the number of cities with non-affiliated locals totaled 190.

In this same period, the American Federation of State, County, and Municipal Employees had grown from a reported 201 cities to 286. The number of cities with locals of the International Association of Fire Fighters increased from 435 to 560 cities during the last five years.

Progressive Towns Re-Light for Safety

These "before" and "after" photos show how one eastern city tripled the illumination with L-M Spherolites. Formerly, light on the pavement was .64 lumens per square foot; with Spherolites it is 1.8—and with the same size and number of lamps. Same total wattage—but more efficient utilization of light. And, says the superintendent, there is less breakage, less cleaning, and maintenance costs are substantially lower. Not bad!



Safety goes up... maintenance goes down... with L-M Spherolite

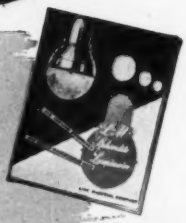
Spherolite luminaires direct a high percentage of the light onto the pavement, spreading the light over a wide area, in a controlled pattern. Here are some Spherolite features:

Versatility: adaptable to all mounting requirements; wide variety of metal hoods, porcelain heads, glassware, holders, deflectors.

Low Maintenance: dust and moisture seals between glass and reflector and hood; easily accessible for relamping. Hoods sealed against dust, moisture insects. L-M fluted reflector by-passes the light around vertical axis of lamp, avoiding heat concentration and assuring full lamp life.

Long life: weather-tight construction maintains reflector efficiency for many years; aluminum and other non-corrosive materials assure long life; heat-barrier hoods prevent cable deterioration.

Engineering Service: need help? ask for an L-M Street Lighting Engineer—trained, experienced men who help you get safe, efficient street lighting to fit your budget.



Want to Know More?

Write for L-M's new Spherolite bulletin. Photometric data, I.E.S. recommendations, and other useful information. Details on Spherolite construction and application, on hoods, glassware, standards, brackets, accessories, and control equipment including L-M "Wired Radio" control. Ask any L-M field engineer or write **Line Material Co., Milwaukee 1, Wisconsin.**

LM

LINE MATERIAL Street Lighting

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • "Wired Radio" Control Equipment • Capacitors

The Case Against Inadequate Visibility

(*Major Factor in Night Traffic Deaths*)

By EDMOND C. POWERS
Director of Public Information
The Street and Traffic Safety Lighting Bureau, Cleveland, Ohio

THE most convincing evidence that inadequate visibility is a major factor in night traffic accidents is the extent to which night fatalities are reduced when visibility is made adequate by installation of modern street lighting. Here's the evidence from 12 cities that relighted certain streets.

	% Reduction in Fatalities
Bridgeport, Conn.	93
Cleveland, Ohio	29
Detroit, Mich.	75
Grand Rapids, Mich.	78
Hartford, Conn.	65
Hayward, Calif.	100
Houston, Texas	80
Kansas City, Mo.	86
Los Angeles, Calif.	91
Salt Lake City, Utah	92
Spokane, Wash.	100
Waterbury, Conn.	100

Applying the above average of 82% to the 6,050 night urban traffic deaths for the year 1948, it would appear that modernization of the nation's city street lighting might save 4,960 lives annually in our municipalities.

Lighted Versus Unlighted Streets

Another clue to the extent that inadequate visibility contributes to fatal night accidents is found in state reports that record fatal accidents after dark on both lighted and unlighted streets.

Fatal accidents during darkness reported by 15 states totaled 3,752. Of these, 2,922 were reported under "darkness—street or highway unlighted." This classification accounts for 2,092 *more* fatal accidents than "darkness—street or highway lighted," for which 830 were reported.

Evaluation of Other Factors

Another basis for evaluating the visibility factor in night accidents is by estimating, as accurately as possible, the extent to which other factors contribute to such accidents. These factors, in terms of driver violations, were reported in fatal accidents by city and state authorities, as shown here.

(from *Accident Facts*, 1948 Edition)

Violation	*Per Cent Violations Reported* Urban	Rural
Excess speed	16	29
Right of way	13	6
Wrong side of road	3	12
Under influence of alcohol	5	8
Disregarded officer or traffic control device	4	4
Improper passing	2	5

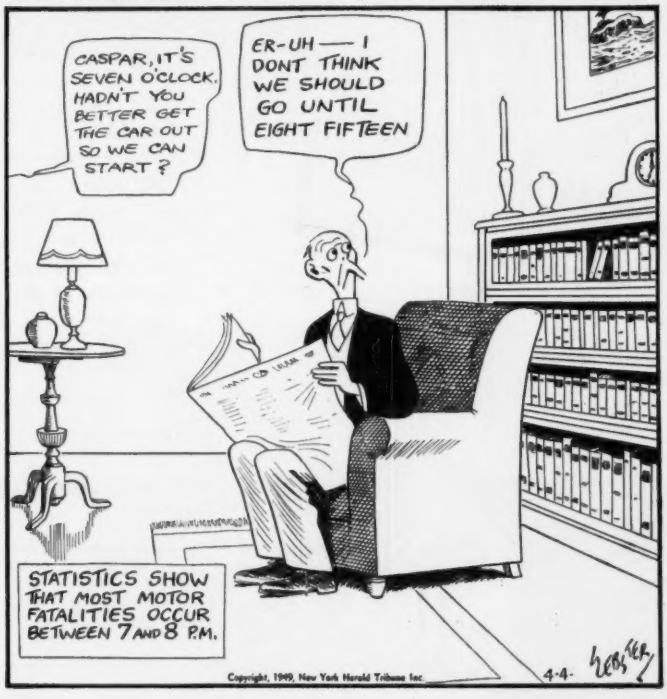
The relative importance of these driver violations as factors in night traffic accidents can be gauged by applying the percentages to the year's total darkhour fatalities. The results are shown here.

FATAL NIGHT ACCIDENT FATALITIES
(Invoiving Reported Driver Violations)

Violation	Urban	Rural	Total
Excessive speed	970	3,410	4,380
Right of way	787	720	1,507
Wrong side of road	182	1,410	1,592
Under influence of alcohol	322	940	1,262
Disregarded officer or traffic control device	243	470	713
Improper passing	121	587	708
Total all violations	2,625	7,587	10,162

Actual night fatalities in 1948—18,400

The Timid Soul : : : : : : : : BY H. T. WEBSTER


CASPAR, IT'S SEVEN O'CLOCK. HADN'T YOU BETTER GET THE CAR OUT SO WE CAN START?
ER-UH — I DONT THINK WE SHOULD GO UNTIL EIGHT FIFTEEN
STATISTICS SHOW THAT MOST MOTOR FATALITIES OCCUR BETWEEN 7 AND 8 P.M.
4-4-
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JOSLYN STREET LIGHTING

The 25′ JOSLYN STEEL POLE with 6′ bracket

Luminaires, brackets and steel standards all engineered for

HIGH OPERATING EFFICIENCY, DURABILITY and ATTRACTIVE APPEARANCE

now available on

QUICK DELIVERY

The 25′ pole with 6′ bracket and base having 3" x 5" hand hole, as illustrated, is now carried in stock in our Chicago plant . . . Many other designs are available for various mounting heights, bracket lengths, and with provision for mounting transformer in base or with fittings for overhead wiring . . . The wall thickness of our poles at the base is over ¼", giving that added assurance of strength and long life . . . Complete information on request.

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THE SOUTH EAST JOSLYN CO.
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Complete Pole Line Equipment

30 NORTH WACKER DRIVE, CHICAGO 6, ILL.

Night-accident factors, in terms of pedestrian traffic violations in fatal accidents, are reported by city and state authorities as follows, from *Accident Facts*, 1948 Edition:

Violation	*Per Cent Violations Reported*	
	Urban	*Rural*
Crossing between intersections	52	10
Walking in roadway	6	25

The extent to which pedestrian traffic violations contribute to fatal pedestrian accidents can be gauged by applying the above percentages to total pedestrian fatalities.

Urban pedestrian fatalities for the year totaled 6,508, rural 3,278. Accepting the estimate that 75% of all pedestrian traffic deaths occur after dark, the year's total night pedestrian fatalities were 7,329. Night pedestrian deaths chargeable, therefore, to the two major pedestrian violations, are as shown below.

Violation	*Urban*	*Rural*	*Total*
Crossing between intersections	2,540	245	2,785
Walking in roadway	293	612	905

Still another observation that adds evidence that the visibility factor is largely to blame for night accidents is that the fatality rate per accident is much higher at night than in daylight. Out of 261,324 accidents in 14 states, 116,561, or 44.6%, occurred after dark. However, of the 8,389 accidents which were fatal, 4,880, or 59%, occurred after dark. As an average, one accident in every 22 is fatal in darkness, compared with one in every 37 in daylight.

Conclusion

An attempt has been made in this article to gauge the extent to which inadequate visibility is a factor in night traffic accidents. The initial fact remains: reductions in night deaths ranging between 40 to 100% have been achieved in 12 cities by providing safe driving and walking visibility through the installation of modern street lighting. That municipalities are awake to this fact is evidenced by the planned expenditure of $70,288,000 for improved lighting in 273 cities and towns.

Safety and Appearance Feature Completed Lighting Program

By LESTER E. HOLLOWAY
Mayor
Muncie, Ind.

TEAMWORK among Muncie city officials, the Indiana and Michigan Electric Company, press, and public has resulted in the outstanding street-lighting system initiated several years ago. The contract, signed by company and city on October 1, 1946, was followed by the usual wait for materials. The recently installed system was directed at the safety of motorist and pedestrian, not forgetting eye appeal by day and night. The requirements are given below:

1. High-intensity lighting in the downtown business district to be of the white-way type with principal east-and-west and north-and-south street leading into downtown areas also lighted in accordance with the downtown plan, but to a lower intensity in keeping with traffic requirements.

2. Boulevard lighting on heavily traveled arterial streets.

3. Adequate intersectional lighting in residential and outlying areas.

Downtown areas are lighted by 10,000-lumen pendant-type, Line Material Spherolite luminaires mounted on 25-foot Union Metal monotube standards with a 6-foot bracket arm. This system is fed by underground cable and the standards are bolted to concrete bases. The standards are arranged with a staggered spacing system designed to produce an average initial lumen per square foot in the uptown area of 1.10 to 1.48, depending on the width of the street and type of street surface. This is above the I.E.S. requirements for volume of traffic found in Muncie. In

Downtown areas are lighted by 10,000-lumen Line Material Spherolite luminaires mounted on 25-foot Union Metal Monotube standards with 6-foot bracket arms. Compare height and effectiveness of old-fashioned upright unit.

New lighting on Muncie's residential-traffic streets.

you get COMFORTABLE SEEING* with G-E street lighting

*Comfortable Seeing—the light you need, exactly where you need it—economically.

For Comfortable Seeing, take a look at Provo, Utah. Here they chose G-E Form 79 VR luminaires for the residential sections. Notice that these luminaires are widely spaced—yet, due to an exclusive G-E principle of light control, give plenty of light exactly where it's needed —down on the street for Comfortable Seeing. By using Form 79 VR's Provo has almost doubled the visibility provided by older fixtures—at the same cost, but with far more comfort.

With its deep shielded filament, its reflector designed to direct light downward and a verti-lateral refractor which turns and lifts the light into two narrow, highly controlled beams 180 degrees apart, the type VR is ideally suited for Comfortable Seeing in residential areas.

When you get to your residential sections and light-traffic streets in your relighting plan, get all the details on the Form 79 VR—so that your community, too, will have Comfortable Seeing. Write *Apparatus Dept., General Electric Company, Schenectady 5, New York.*

This is the Type VR optical assembly on a Form 79 hood.

It has an I.E.S. Type 1 of light distribution and is recommended for illuminating residential and light-traffic streets. Spaced at long intervals and using 4000 or 6000 lumen lamps, the Form VR is economical both in installation and operating costs. Maximum candlepower is emitted at a comparatively high angle yet with excellent side shielding to give a long narrow light distribution down on the street.

GENERAL ELECTRIC

the arterial streets leading to downtown areas, typified by Walnut Street north and south, and Main Street east and west, 6,000-lumen lights are mounted on the same type of standards. There are two hundred twenty-seven 10,000-lumen, and forty-seven 6,000-lumen lamps in this part of the system.

The arterial-highway section of the system on Madison, Wysor, and Broadway from city limit to city limit is lighted by a 6,000-lumen, 20-ampere series white-way system mounted on monotube standards. This part of the system consists of one hundred ten 6,000-lumen lights with a spacing of 112 to 178 feet to provide light in accordance with traffic requirements. All luminaires in this system have directional glassware to provide a maximum of light on the street surface.

A 6,000-lumen, 20-ampere white-way system of the same type as on Madison Street was installed on Wheeling and University Avenues, both carrying heavy traffic. Wheeling Avenue is a part of State Route No. 21, and University Avenue ties into the Ball College and Ball Hospital area. This system has fifty-two 8,000-lumen lights with directional glassware.

The Ball College-area lighting consists of twenty-three 6,000-lumen boulevard lights of an ornamental type that blends in well with the surroundings.

All intersectional lighting in the city consists of 4,000-lumen Spherolite luminaires mounted on mast arms at a height of 23 feet to the light center. Tree trimming was done to get as much light as possible on the street. In heavy traffic areas the lights are provided at every intersection.

All seven bridges in the downtown area are lighted by the boulevard-type units which tie in with the downtown white-way system. Directional glassware and spacing of units provide for a maximum of high-intensity lighting on these heavily traveled bridges.

The entire street-lighting system in Muncie has a total of 1,719 units of the various types installed, of which 534 are of the boulevard or white-way type.

Brightest Lights Against Thickest Fog

THE world's brightest lights will be pitted against the nation's thickest fog by the U. S. Air Force in its search for a way to take the "blindness" out of "blind" landings. The test is at Arcata, Calif., foggiest spot in America. The newly developed all-weather approach lights are designed to penetrate "zero-zero" fog for at least 1,000 feet. The system includes 36 of the world's brightest lights — 3,300,000,000 peak candlepower each — and 35 lights of somewhat lesser brilliance. Lined up in a row two-thirds of a mile long, the 71 lights will produce lightning-like flashes to guide fog-bound pilots to the Arcata airfield runway.

The key to the tremendous brilliance of the krypton flash unit is a lamp the size of a cigaret developed during the war by engineers of the Westinghouse Lamp Division, Bloomfield, N. J. Only 4 inches long, the lamp is a slender quartz tube filled with krypton, one of nature's rarest gases. When a surge of electricity is discharged through the gas, the lamp flashes with a brilliance of ten million candlepower per square inch—ten times greater than that of the sun. The reflector and optical system of the lighting unit magnifies this flash to 3,300,000,000-beam candlepower—the equivalent during its brief interval of 50 million 60-watt household bulbs and brighter than the largest searchlight ever built.

The line of 71 lights will flash 40 times a minute and can be varied in intensity in accordance with weather conditions. In clearer weather, the krypton units can be cut in brilliance, or they can be turned off altogether in favor of the less brilliant neon units which serve either as flashing or steadily burning lights of five different intensities.

A six-light installation at the Cleveland Municipal Airport has been tested for over a year with great success. The first full commercial installation of an approach system recently was completed at New York City's new International Airport.

New Lights and Bleachers For Canton Fields

LIGHTS for Kurtz Softball Field and 981 bleacher seats for City, Jackson, and Cook baseball diamonds in Canton, Ohio, a project of long standing, are soon to become a reality.

Canton City Council paved the way for these increased recreational facilities by appropriating $10,000 toward the required $20,000.

The Public Welfare-Recreation Committee of the Canton Chamber of Commerce, John W. Brothers, chairman, is actively participating in the drive for the remainder. The Junior Chamber of Commerce with Bill Young, chairman, is aiding the campaign by selling "Booster Memberships" which entitle holders to witness "Sponsor's Night" program, the first event planned at Kurtz Field after the lights have been installed.

Bigger Lamps Twice As High Up in Rawlins, Wyo.

Rawlins' new "white way" of ninety-six 16,000-lumen General Electric mercury-vapor lamps. The old units were 2,500-lumen incandescents mounted at a height of 11½ feet. The new luminaires are on 6-foot brackets from Union Metal standards 25 feet above the pavement, four of these units per block. The new system works on a multiple circuit, and averages seven lamps per controller. Controllers are operated from centrally located photoelectric relay.

Any angle is the right angle with Joe Prismo. You don't have to point light directly at him to get action. Just as soon as light touches the surface of anything that's been reflectorized with Prismo, reflex reflection returns the rays parallel to the source of light.

This means that a surface coated with Prismo gives back light more efficiently and the reflection lasts longer because of its wider angle of reflectivity (88°). Prismo's no flash in the pan! That's why signs reflectorized with Prismo are more effective with the driving public.

The special plastic PRISMO BINDER is a bull-dog for grip. The millions of tiny, round, crystal clear PRISMO SPHERES are held for keeps—securely in the binder! That's why the PRISMO LIFE-LINE is the longest lasting center line on any highway!

PRISMO'S STAYING POWERS, speedy, easy application, low initial cost, plus its obvious superiority in the field of reflection makes it your budget's best buy!

Investigate Prismo today. Write for fully informative bulletins. No obligation, of course.

PRISMO SAFETY CORPORATION

HUNTINGDON, PA.

The SPHERE of SAFETY

Gospel of Highway Safety— *Will You Apply It?*

After several successive years of traffic fatality reduction, it becomes increasingly difficult to find effective means for continuing this downward trend. While *fatalities* are quite generally accepted as the measure of the traffic safety problem, it should not be forgotten that the reduction of all *accidents* is the real objective.

Last month's meeting in Washington of the President's Highway Safety Conference brought forth many constructive suggestions in its various committee reports and discussions. A few of them are summarized in the accompanying article. The official summary and copies of the various reports may be secured from Robie Dunman, Administrative Director of the Conference, with headquarters at the Federal Works Agency, Washington, D. C.

Traffic safety problems are characteristically human and individual and the community possessed of the will and the ability to deal professionally with them, either with or without other governmental assistance, may find a satisfying source of pride in safety accomplishment.

THE President's Highway Safety Conferences—the third was held in Washington, June 1-3—were like revival meetings. They gave the gospel and the spirit, but the individual states, counties, and municipalities must work out their salvation. An example is the effort in Evansville, Ind., described in the June issue of this magazine and preprinted in time for the recent Conference.

As far as possible last month's meeting envisioned the entire problem of street and highway fatalities and accidents, starting with the driver and pedestrian—the chief causes of it all—and closing with the engineering measures which make the automobile era tolerable. Being strictly material, engineering and enforcement are simple because understood. The driver and the pedestrian, each the other minus or plus a car, are the unknown quantity.

The attempt to bring this human factor out into the open and rationalize it was made by the Committee on Motor Vehicle Administration. Its recommendations cover four basic objectives:

1. Through driver examination and licensing, it would require motorists to develop the driving skill and the knowledge of traffic laws essential to safe use of the public highways.
2. Through suspension or revocation of licenses when driving records warrant such action, it would remove from the highways those who cannot or will not assume individual responsibility for highway safety.
3. Through motor-vehicle inspection, it would provide a periodic check on the operating condition of the vehicle and serves to make motorists more keenly aware of the importance of safe driving attitudes and of their individual responsibilities in accident prevention.
4. Through the use of sound financial-responsibility laws, it would provide a further incentive for safe driving.

Those who are aware of the nationwide faultiness of driver-licensing methods can only echo, "Here is the gospel —do these things."

During the past year, municipal and county government officials have been taken into full partnership with state officials in a National Highway Safety Committee. It is intended as the common meeting ground for consideration of official traffic problems and plans, on a national basis.

Recognition of the smaller communities and the rural districts as key areas for potential improvement in the accident situation has been steadily growing. For some time and in many states, the leadership for engineering undertakings in these areas will rest largely with the state highway departments. Of the 44 states reporting, in 39 the approval of the state is required for all sign and traffic-signal installations on state highways or extensions thereof through municipalities.

According to data from 46 states, 18,195 miles of highways were constructed during 1948. Ninety-four percent of this mileage was two-lane roadway. Of the multi-lane roadway, built in 1948, the ratio of divided highway to undivided highway is in excess of 5 to 1.

Grade separations are unique in their contribution to safety, and 119 highway separations and 114 rail-highway grade separations were constructed during 1948.

From 38 states come reports of installation of more modern *street lighting* as a step toward greater reduction of night accidents. A 14% increase over the 1947 mileage lighted to I.E.S. standards is indicated. A comparison of the 29 states reporting hazardous intersections lighted in both 1947 and 1948 shows that the total number of rural intersections now provided with modern illumination in those 29 states amounts to 1,415, an 8% gain over 1947. In all 43 states submitting data for 1948, there are 3,715 hazardous rural intersections now lighted.

Reports from 896 cities show that small but steady gains are being made in street-lighting installations—from 2 to 5% in the number of street-lighting units installed in cities of all population groups, except the 100,000-200,000 class, where a slight decrease is reported. For the entire report-group of 896 cities, it is estimated that approximately 2,125,000 street-lighting units were in service at the end of 1948.

For the 29 states for which comparable 1947 and 1948 data are available, it appears that the increase in *sidewalk mileage* during the past year is approximately 12%. There is need for extension of sidewalk improvements in practically all cities. In 429 comparable cities, 3,353 miles of new and replaced sidewalks were reported constructed during 1948, making a total of approximately 65,000 miles for these cities. The number of intersections with crosswalks marked adequately exceeds 30,000 in 43 states. Cities in all population groups showed composite increases from 9 to 22% in the number of intersections with crosswalks marked, and 68,000 intersections are so marked in 896 cities.

The *pedestrian signal* is coming into wider use as the full impact of the pedestrian-control problem reaches more and more traffic officials. Comparable

SAN FRANCISCO'S TRANSIT SYSTEM MOVES PEOPLE EFFICIENTLY...

With Electrics!

"Trackless trolleys and trolley cars will be the backbone of our transit system . . . We have 230 trackless trolleys now in service and contemplate purchasing a total of about 330."

Mayor Elmer E. Robinson
San Francisco

Mayor Robinson further explains that San Francisco's transit program has two phases:
1. Meet the immediate and urgent need for mass transit vehicles now, and
2. Provide for San Francisco's traffic needs for the next 25 years.

THAT'S SMART PLANNING

ARE THESE CONDITIONS TRUE IN *Your* CITY?

Merchants must go to their customers because customers can't get to them?

City engineers propose smaller automobiles because there's no room to widen streets?

Your city is probably suffering from traffic congestion and blight conditions. Sound transit planning—to move people instead of vehicles—may provide an answer in your city. Electric vehicles on your trunk line attract more riders because of their comfort and speed. They please transit management because of their low cost of operation. A healthy transit system means better service, more public support. Write us. We would like to help you. *Apparatus Department, General Electric Co., Schenectady, N. Y.*

GENERAL ELECTRIC

data disclose that 14% more intersections under state jurisdiction are now equipped with special signals for pedestrians than was the case a year ago. At the end of 1948, 1,135 intersections in 43 states were equipped with special pedestrian signals. In 429 comparable cities, 30% more signals of this type were added during 1948, making a total for all cities reporting close to 3,600.

All 48 states reported on the mileage of *center line* in place; the record shows an 11% gain over 1947.

Highway Signs and Signals

The estimated number of *state highway signs* in place at the end of 1948 in 41 states is approximately 4,125,000, a 5% increase over the previous year. In the 28 states reporting the number of new or reconditioned signs installed during 1948, the astounding total of 1,027,000 was recorded. These figures, which relate, of course, only to highways under state jurisdiction, present some idea of the magnitude of the signing problem under present traffic conditions. They also suggest the need for greater attention to uniformity features if the average motorist is to receive proper instruction from these millions of roadside signs.

The popularity of the *traffic signal* continues unabated, and 14% more traffic signals were in use at the end of 1948 than in the year before. It appears that the increase is general.

During 1948 the states expended more than 4,000 man-years of effort on installation and maintenance of signs, signals, and other traffic-control devices and equipment.

Attention to the protection of *rail-highway crossings* at grade has been continued on the approximately 46,000 crossings under state jurisdiction in 43 states. Of this total about 29,000 are protected by signs only, and the gain in this category is less than 1% over last year. The number protected by automatic signals, gates, and similar devices has increased approximately 3%.

The situation with respect to *parking meters* and disposal of the revenue therefrom has changed little during the past year. Large cities are the worst offenders in turning this income to purposes other than traffic improvement. With the need for off-street parking so very far from satisfied, it is time for forthright action on the part of highway users against officials who persist in exploiting the parking meter solely as a device for new and unencumbered general revenue.

Philadelphia Reduces Traffic Fatalities

FORTY-NINE fewer people were killed by motor vehicles on the streets of Philadelphia last year than in 1947—148 fatalities in 1948, as compared with 197 in 1947.

The chief gainers were the 34 pedestrians and 15 car occupants who were not killed in 1948. Forty of the pedestrians killed were crossing the street between intersections or from between parked cars. Of those struck while crossing at the intersection, 19 were killed where traffic signals were in operation and 26 where there was no traffic signal.

A significant trend was the reduction in fatal accidents during hours of darkness. During 1948, there were 84 persons killed in night traffic accidents, as compared with 116 persons during the preceding year. This seems to indicate that the improved street lighting, which we have already installed as part of our over-all program for the city (See THE AMERICAN CITY for April 1949, page 149), has made the streets safer at night.

The downward trend of fatalities, which began about the first of November 1947, is still continuing and can be attributed to the safer conditions resulting from a number of things being done by this Bureau. The erection of traffic signals at 152 new intersections and better street lighting; the safety educational work being done by the Philadelphia Highway Traffic Board and the increased activity in traffic enforcement of the Bureau of Police which issued 356,021 summonses for moving and parking violations in 1948, an increase of 13,853 summonses over 1947.

During 1948 there were 8,801 persons injured in motor-vehicle accidents, an increase of 264 or 3.1% over 1947, when 8,537 persons were thus injured in Philadelphia. The case histories of approximately 18,431 accident-prone drivers were filed for the year 1948.

The names of 1,916 motor-vehicle operators on file with two or more accidents were listed and turned over to the State Police Drivers' Clinic for re-examination and reconsideration of operating privileges. The Clinic sent out letters addressed to 1,000 of these operators, and 520 accident-repeater cases were examined. The remainder did not show up. We have on hand the names of 900 repeaters to be processed.

Of the 12,296 accidents reported last year, only 325 involved defective vehicles and in only one of these cases was there a fatality. The reason doubtless is that for a number of years Pennsylvania has enjoyed compulsory motor-vehicle inspection. The motor-vehicle defects were as follows:

Motor Vehicle Defects	*All Accidents*	*Fatal Accidents*
Defective brakes	158	1
Steering mechanism defective	64	0
Puncture or blow-out	38	0
Headlights insufficient or out	33	0
Headlights glaring	25	0
Rear light insufficient or out	3	0
Other defects	4	0
Total defects	325	1

ROBERT A. MITCHELL
Chief Traffic Engineer
Department of Public Safety
Bureau of Traffic Engineering
Philadelphia 7, Pa.

Community Importance Of Trucking Operations

A PLEA for individual truck lines to tell the story of the trucking industry in their advertising messages was made at the opening session of the American Trucking Association's Customer Relations Council by H. D. Horton, ATA president.

"We are operating under conditions in which it is imperative that the public be told the true story of the contribution trucks are making to the American standard of living and their vital role as a payer of taxes, employer of men, and consumer of goods," Mr. Horton said. "Not only must individual truck lines tell this story, but ATA's national advertising and public relations campaign must be stepped up if this industry wants to continue to make progress."

Leo Lynch, newly appointed general sales manager of Pacific Intermountain Express Co., Salt Lake City, Utah, questioned the failure of the trucking industry to advertise and pointed to Pacific advertising in national publications, newspapers, and industry media as evidence of that company's belief in the value of company advertising.

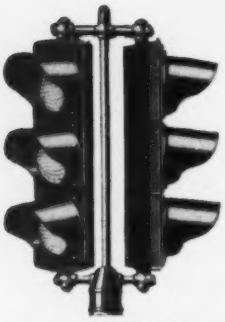
2,425 Highway Deaths In New Jersey in 10 Years

DEATHS on the highways of 533 persons in 11 months of 1948, and 638 in all of 1947 appear to have gotten under New Jersey's skin. State Motor Vehicle Director Magee lists these causes and the number of accidents and deaths in the last 10 years: Speeding, 44,345 accidents and 1,726 deaths; traveling on wrong side of road, 34,112 accidents and 557 deaths; following too closely, 32,357 accidents and 64 deaths; improper turns, 31,981 accidents and 78 deaths. He named these invitations to grief before a group of business leaders who organized in Trenton, N. J., on January 13 to spread the message of "don't do 'em."

CROUSE-HINDS

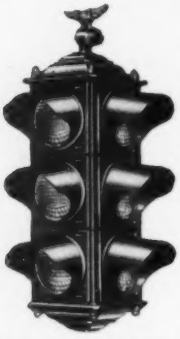
Traffic Signals and Controllers

..... a type for every purpose



Type TRP-223D

Two-way, Three-section Adjustable Signal For Post Top Mounting

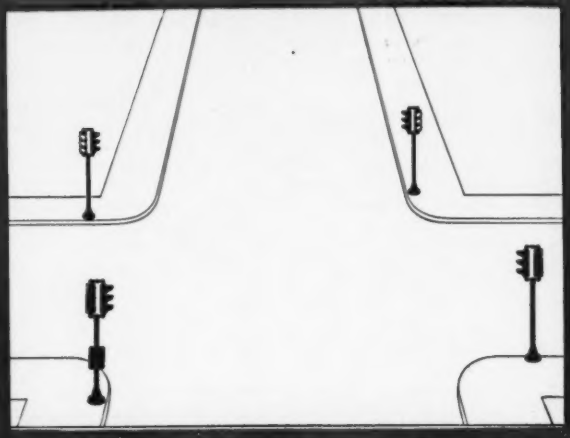


Type TSW-443D

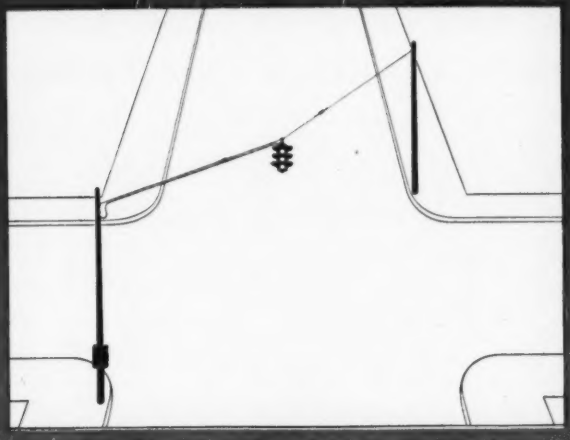
Four-way Three-section Non-Adjustable Signal For Mounting on a Span Wire

Type KS-1 Automatic Synchronous Controller

Six Signal Circuits — 4 to 16 Intervals



Typical Installation of TRP-223D Two-Way Post Mounted Signal



Typical Installation of TSW-443D Span-Wire Signal

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems ... from simple installations up to the most complex heavy traffic problem. Send for your copy.

CROUSE-HINDS COMPANY
Syracuse 1, N. Y.

Offices—Atlanta—Boston—Buffalo—Chicago—Cincinnati—Cleveland—Dallas—Denver—Detroit—Houston—Indianapolis—Kansas City—Los Angeles—Milwaukee—Minneapolis—New York—Philadelphia—Pittsburgh—Salt Lake City—San Francisco—Seattle—St. Louis—Washington.
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TRAFFIC SIGNALS · CONDULETS · FLOODLIGHTS · AIRPORT LIGHTING

Trolley Coaches Indicated For All Milwaukee's Remaining Street Railway Lines

By FRANK P. ZEIDLER
Mayor
Milwaukee, Wis.

MILWAUKEE, like many other growing industrial cities, is trying to keep its public transit facilities up to date as part of the solution to traffic congestion.

Since 1936 we have been extending or converting street-railway lines through the use of trolley coaches and motorbuses. With the increasing population in the Milwaukee metropolitan area, a question arose whether continuing this type of street railway modernization by converting the last nine remaining streetcar lines would serve the interests of the city as well as the use of P.C.C. cars on these lines.

On October 22, 1948, the consulting engineering firm of Coverdale & Colpitts, of New York, was asked by the City of Milwaukee to make an investigation of the effect on the interests of the city of the conversion to trackless trolley or motorbus of the remaining streetcar lines in the city. The operating company is the Milwaukee Electric Railway & Transport Company.

From the Consultant's Report

The type of vehicle best suited to use on Milwaukee streets, from the city's point of view, depends on the density of public-transit passenger traffic now and in the future, the best use of the streets as between public transit vehicles and private automobiles, the relative desirability of the vehicles as to speed in transporting passengers, in inducing maximum use of public transit as compared with private automobiles, and facilitating the movement of automobile traffic on streets used by both public transit and private vehicles.

Rubber-tired vehicles are shorter than rail cars but must run more frequently to carry the same passenger load. Buses or trackless trolleys occupy approximately the same street area as streetcars.

Rail cars run on tracks located in the center of the street, while buses and trackless trolleys are maneuverable and usually load at the curb. . . . This maneuverability permits more automobile traffic to flow on (Milwaukee) streets served by rubber-tired transit vehicles.

Increase in vehicle traffic volume from 8.5% to 188.4% after conversion are indicated by sample traffic counts. These traffic counts also reflect natural growth in traffic from increased automobile registration and, therefore, actual counts over the 15-year period are not entirely comparable. The obvious scatter of the figures is a clear indication that few, if any, of the traffic counts represent street capacities. . . .

If, however, we assume that the maxi-

DATA PERTAINING TO TROLLEY COACH FRANCHISES
Supplied to Mayor Zeidler by John W. Tanghe, Deputy Commissioner of Public Works

City's Loss in 1948 Dollars Per Annum Per Mile upon the Conversion from Streetcars to Trackless Trolleys:

1.	Replacement charge	$2,530.00
2.	Proportionate share state tax	973.00
3.	Snow removal (allowing $60 credit)	710.00
4.	Street maintenance	1,886.00
	Sub-total	6,099.00
5.	Abandonment and Repaving Obligation	2,530.00
	Total	$8,629.00 per mile

This is the estimated amount of "out-of-pocket loss" to the City of Milwaukee on 1948 price levels for every mile of paved street. The above should not be taken as the Department of Public Works' recommendation as the license fees that should be received by the city from the transport company for the operation of trackless trolley buses on city streets, since there are several other factors that should be considered in arriving at such fees.

ASPHALT PAVING COSTS
On Contracts Awarded by Department of Public Works, City of Milwaukee, Years 1936-1948 Inclusive

Year	*Pavement Removal (Annual Average)*	*8" Concrete Base (Annual Average)*	*3" Sheet Asphalt Surface (Annual Average)*	*Total (Annual Average)*
1936	$0.26	$1.75	$1.12	$3.13
1937	0.25	1.69	1.34	3.28
1938	0.45	1.81	1.49	3.75
1939	0.53	1.86	1.56	3.95
1940	....	....	....	....
1941	0.54	1.74	1.46	3.74
1942	....	....	....	....
1943	0.67	1.79	1.58	4.04
1944	0.61	1.89	1.59	4.09
1945	0.63	2.09	1.72	4.44
1946	0.82	2.44	1.85	5.11
1947	0.96	2.78	1.99	5.73
1948	1.23	3.05	2.20	6.48
Estimated Costs used in Franchise Negotiation on North Ave. Trackless Trolley Line	0.45	1.65	0.90	3.00
1936 Contract E & W North Ave. E. of N. Booth to W. Fond du Lac	0.25	1.80	1.10	3.15
1948 Contract: West North Ave., N. 36 to N. 47	0.92	3.06	2.22	6.20

NORTH AVENUE TRACKLESS TROLLEY LINE
Per Coach License Fee
(Based on 1936 Franchise Provisions)

Year	*Asphalt Paving Cost (per sq. yd.)*	*License Fee Per Vehicle*		
		40-Seat Bus	*41-Seat Bus*	*44-Seat Bus*
1936	$3.00*	$312.50	$320.31	$343.75
1946	5.11**	532.29	545.60	585.52
1947	5.73**	596.88	611.88	656.57
1948	6.48**	675.00	691.88	742.50
1948 (North Ave.)	6.20***	645.83	661.98	710.41

* Assumed Asphalt Paving Cost in Franchise.
** Yearly Average Entire City Asphalt Paving Cost.
*** Asphalt Paving Cost—North Avenue from North 36th Street to West Lisbon Avenue.

Washington VOTES FOR KARPARK

AUTOMATIC PARKING METERS

THE WISE CHOICE

REPEATS CHOICE: Ten years ago, KARPARKS met the highly rigid specifications of the District of Columbia and became the first parking meters installed in the nation's capital. When more meters were needed, Washington's testing facilities were again called on to determine the issue. Again KARPARK carried the day, and 1600 KARPARK HUSKY meters have been added to bring orderly parking at a substantial profit to the city. In choosing a meter, dependability, of course, is all important, but easy, automatic operation, clear signals, low maintenance and servicing are telling points. For full details, write today.

KARPARKS ARE MANUFACTURED BY THE HENSCHEDE HALL CLOCK CO.

KARPARK *Automatics*

KARPARK CORPORATION CINCINNATI 6, OHIO

mum traffic counts of the 17 samples taken both before and after conversion represent or approach actual street capacities, then the difference between 1,253 vehicles per hour before conversion and 1,817 after conversion represents a 45% increase attributable to conversion on a 50-foot street. . . .

A comparison of June 1946 traffic counts taken on streets of similar width served by streetcars, trackless trolleys, and motorbuses providing comparable service to the public, indicates to the engineers "the higher speed of auto travel along transit routes served by rubber-tired vehicles."

Reactions of Milwaukee motorists provide another index of the advantages of greater maneuverability and speed of the trackless transit unit. . . . Most of the Milwaukee drivers we contacted expressed a decided preference for driving on streets with trackless trolleys or motorbuses instead of streetcars. . . .

. . . We find a wide range of probable benefits to the City of Milwaukee through conversion. Therefore, we conclude that, even though the actual experience . . . does not supply the specific amount by which street capacity for automobiles has been increased through the use of rubber-tired transit vehicles in lieu of streetcars, it does prove that, under existing parking and traffic conditions, the greater maneuverability and speed of the trackless vehicle provides an increase which is substantial. . . .

Street Costs Involved

A result of conversion from streetcars to trackless trolleys is to impose on the city the full cost of pavement replacement, street maintenance, and the major part of the cost of snow removal. The assumption of the cost of these services by the city, therefore, should be stated in annual cash equivalent as a set-off against the fees received in order properly to appraise the financial effect to the city resulting from conversion of the streetcar lines to trackless trolleys.

The services performed by the streetcar lines which the city must assume on conversion are (a) replacement of track-zone pavement upon the exhaustion of useful life; (b) maintenance of track-zone pavement; and (c) snow removal to the extent it might differ on streetcar and trackless-trolley routes.

In addition, there would be a loss of tax revenue from the Wisconsin state ad valorem tax on street-railway trackage and pavement.

In developing the cost factor per mile of paved street used by street-railway lines, we have analyzed each service that would be lost. . . .

. . . to approximate the annual replacement charge, we have estimated a useful pavement life of 25 years and the present minimum replacement cost per mile of street, assuming a rate of $6 per square yard, at $61,200. The annual amount to be set aside to produce this figure is obtained by discounting the present cost at a compound interest rate of 3% per annum for 25 years; this results in a cost of $1,678 per mile of street. At a cost of pavement greater than $6 a square yard, the annual charge would be correspondingly higher.

On the basis of nine years' experience reported by the transport company, maintenance of track-zone pavement has averaged $1,257 per mile of street. Adjusted to 1948 dollars, this figure would be $1,886 per mile of street. . . .

The experience of the transport company shows that the cost per mile of street for snow removal averaged $507 over the last seven years. Adjusted to the 1948 dollars, the average is $770 per mile of street. . . .

In computing (the proportionate share of state ad valorem tax), we have used information furnished us by the transport company covering taxes on property as of December 31, 1946. . . . 26.5% of the total property owned by the transport company constitutes paved track. The ad valorem tax assessment on all property in 1947 was $14,500,000. Of this assessment, 26½% is taken as applicable to paved track. On the basis of the tax rate paid, $25.0887 per thousand, the transport company paid $96,403 in taxes on all paved track owned. Under Wisconsin statutes, 65% of this allocation is returned to municipalities which the transport company served. This amounted to $62,662. Since this tax was paid on 70.346 miles of paved streetcar line, the taxes applicable to roadway and track per mile of street at 1947 tax levels are $891.

In summary, therefore, the transport company's estimated annual contribution to the City of Milwaukee for present street-railway routes which would be eliminated upon the conversion to trackless trolley or gasoline motorbus lines is $5,165 per mile of street at 1948 levels. . . . At this rate, the City of Milwaukee will lose $208,203 in present contributions upon the conversion of the existing street-railway lines, to the extent that this is not offset from fees received for trackless trolley and motorbus franchises."

The Coverdale & Colpitts report recommends that, provided the city can secure adequate compensation in future franchises to offset the estimated annual loss of approximately $208,000 in contributions now received from The Milwaukee Electric Railway & Transport Company for the use of existing streetcar lines, it permit the conversion of all remaining streetcar lines to trackless-trolley lines, with the exception of the State Street line, where motorbuses would be preferable. It is also recommended that consideration be given to the feasibility of P.C.C. car service between downtown Milwaukee, West Allis, and Wauwatosa via the existing rapid-transit line, where expanding population provides a good potential market for such a high-traffic-density service.

Many Facts on Parking Meters

COLLECTION and maintenance costs on parking-meter installations vary from 12 to 17% of annual meter revenue, according to the cities of Pittsburgh, Pa., and Spokane, Wash. The figures were broken down in detail several years ago and are included in a 42-page booklet on parking meters available from Mi-Co Meters Div. of the Michaels Art Bronze Co., Inc., Covington, Ky.

The booklet's title is a timely reminder that "Parking Meters Are the Answer to Traffic Congestion." That is a big statement, but the fact remains that the original and basic purpose of meters is to relieve congestion at the curb. While this has not been lost sight of by the cities, their search for additional revenues has placed an uncomfortable emphasis on the revenue rather than the relief brought by meters properly planned for and installed.

Large photographs show various types of meter installations and full-page diagrams present layouts with dimensions of stalls for such arrangements as center, angle, and parallel parking.

An accounting form for keeping track of collections is given as it was worked out in Mansfield, Ohio. A graph depicts the sentiment of the American Legion, AFL, CIO, Chamber of Commerce, and the merchants, before and after the installation of parking meters in 81 cities. A complete parking-meter-locations plan is given for Muskegon.

Take Less Space in Mass Vehicles

THE average of 1.7 passengers per automobile has held with only fractional fluctuations for years. Nearly everyone has seen time and again how 20 and more people, with a green light favoring them, have been stopped by a right-turning car containing one or two persons.

This phenomenon was touched on in *The New York Times* for February 6 by Wallace K. Harrison, architect, and member of the Regional Plan Association. For the improvement of New York's street conditions he called for "laws which stop men with a rear end a foot and a half square from using an auto of forty square feet to carry it."

To close on a constructive note, a single bus, trolley coach or street car will carry rear ends which would be occupying thirty or more automobiles.

50-YARD VISIBILITY FOR THE PATROLMAN

*ONE OF 21 BUILT-IN FEATURES OF PARK-O-METER

The cost of enforcement hinges directly on ability of your patrolling officer to detect violations . . . and PARK-O-METER assures this ability.

Look how the big *Expired Signal* practically shuts out the clear-through visibility that exists when meter is not in violation. Your officer merely has to ride down the street to detect violators . . . on both sides at once if you choose.

And the die cast PARK-O-METER case is designed so that there are no confusing shadows, and no shelves for ice and snow to lodge on and destroy this all-day, all-weather, 50-yard visibility.

*Ask us to show you 20 more built-in advantages of Park-O-Meter . . .

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

July 17-20—Oakland, Calif.
National Association of County Officials. Annual Convention. Exec. Dir., Keith L. Seegmiller, 1616 I St. NW., Washington 6, D. C.

July 25-27—Pittsburgh, Pa.
Pennsylvania Chiefs of Police Association. Annual Convention (Hotel William Penn). Sec., Frank B. Titus, 80 Price Ave., Lansdowne, Pa.

July 26-28—Niagara Falls, N. Y.
New York State Association of Chiefs of Police. Annual Meeting (Hotel Niagara). Exec. Sec., R. W. Morris, Room 204, State Tower Bldg., Syracuse, N. Y.

***Aug. 8-10—Harrisburg, Pa.**
League of Cities of the Third Class in Pennsylvania. Annual Convention (Hotel Penn Harris). Pres., Walter E. Greenwood, City Hall, Harrisburg, Pa.

***Aug. 22-24—Philadelphia, Pa.**
Pennsylvania State Association of County Commissioners. Annual Convention (Hotel Benjamin Franklin). Sec.-Treas., Herbert S. Bolger, Court House, Hollidaysburg, Pa.

August 22-24—State College, Pa.
Pennsylvania Water Works Operators Association. Annual Meeting (State College). Sec., Ivan M. Glace, 22 South 22nd St., Harrisburg, Pa.

Aug. 22-26—Baltimore, Md.
National Shade Tree Conference. Annual Meeting (Hotel Lord Baltimore). Sec.-Treas., L. C. Chadwick, Department of Horticulture, Ohio State University, Columbus, Ohio.

***Aug. 29-Sept. 1—St. George, Utah**
Utah Municipal League. Annual Meeting (Hotel Arrowhead). Sec.-Treas., Mrs. Lyla Ray, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 6-7—Cooperstown, N. Y.**
American Water Works Association—New York Section. Fall Meeting (Hotel Otesaga). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York, N. Y.

Sept. 7-9—Bedford, Pa.
Governmental Research Association. Annual Conference (Hotel Bedford Springs). Sec., Louis D. Brown, 30 Rockefeller Plaza, N. Y. 20, N. Y.

Sept. 8-9—Minneapolis, Minn.
American Water Works Association—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., R. M. Finch, 518 Metropolitan Life Bldg., Minneapolis 1, Minn.

***Sept. 8-10—Saranac, N. Y.**
County Officers' Association of New York. Summer Conference (Saranac Inn). Exec. Sec., Donald C. Scribner, County Bldg., Johnstown, N. Y.

***Sept. 11-15—Dallas, Texas**
International Association of Chiefs of Police. Annual Conference (Hotel Baker). Exec. Sec., Edward J. Kelly, 1424 K St., NW., Washington 5, D. C.

***Sept. 12-13—Minot, N. D.**
League of North Dakota Municipalities. Annual Convention, Exec. Sec., Myron H. Atkinson, City Auditor, 609 Thayer Ave., Bismarck, N. D.

Sept. 12-16—New Orleans, La.
National Recreation Association. Annual Congress (Municipal Auditorium). Sec., T. E. Rivers, 315 Fourth Ave., New York 10, N. Y.

Sept. 13-16—Dixville Notch, N. H.
New England Water Works Association. Annual Meeting (Hotel Balsams.) Sec., Joseph C. Knox, 20 Tremont Bldg., Boston 8, Mass.

***Sept. 14-16—Long Beach, N. Y.**
Municipal Electric Utilities Association of New York State. Annual Conference (Hotel Murida). Exec. Sec., B. N. Sparks, 93 Park St., Tupper Lake, N. Y.

***Sept. 18-21—Kansas City, Mo.**
American Public Works Association. Annual Congress (Municipal Auditorium). Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago.

***Sept. 19-21—Topeka, Kans.**
The League of Kansas Municipalities. Annual Convention (Municipal Auditorium). Exec. Dir., John G. Stutz, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 19-22—Boston, Mass.
National Tax Association. Annual Conference (Hotel Statler). Sec., Ronald B. Welch, P. O. Box 1799, Sacramento 8, Calif.

Sept. 19-23—French Lick, Ind.
Illuminating Engineering Society. Annual Convention (Hotel French Lick Springs). Exec. Sec., A. D. Hinckley, 51 Madison Ave., New York, N. Y.

Sept. 20-22—Des Moines, Iowa
Iowa Sewage Works Association. Annual Meeting (Hotel Kirkwood). Sec.-Treas., Leo Holtkamp, P. O. Box 310, Webster City, Iowa.

Sept. 20-23—Detroit, Mich.
American Institute of Park Executives. Annual Convention (Hotel Book Cadillac). Exec. Sec., Frank L. Brunckhorst, 30 North LaSalle St., Room 831, Chicago, Ill.

Sept. 21-23—Atlanta, Ga.
Georgia Water and Sewage Works Association. Annual Water and Sewage School (Georgia Institute of Technology). Sec.-Treas., Leonard B. Waller, R.F.D. No. 12, Box 246, Atlanta, Ga.

Sept. 22-23—Colorado Springs, Colo.
American Water Works Association—Rocky Mountain Section. Annual Meeting (Hotel Acacia). Sec.-Treas., O. J. Ripple, 426 Cooper Bldg., Denver 2, Colo.

Sept. 22-23—Wheeling, W. Va.
American Water Works Association—West Virginia Section. Annual Convention (Oglebay Park). Exec. Sec., J. B. Harrington, Div. of Sanitary Engineering, State Health Dept., Charleston, W. Va.

***Sept. 25-27—Joplin, Mo.**
American Water Works Association—Missouri Section and Missouri Water and Sewerage Conference. Joint Meeting (Hotel Connor). Sec., Warren A. Kramer, State Office Bldg., Jefferson City, Mo.

Sept. 25-28—Washington, D. C.
Institute of Traffic Engineers. Annual Meeting (Hotel Wardman Park). Sec.-Treas., Wilbur S. Smith, Strathcona Hall, New Haven 11, Conn.

Sept. 27-30—New Orleans, La.
International Association of Fire Chiefs. Annual Meeting (Hotel Roosevelt). Exec. Sec., D. B. Tierney, 8 Robbins Road, Arlington, Mass.

Sept. 28-30—Traverse City, Mich.
American Water Works Association—Michigan Section. Annual Meeting (Hotel Park Place). Exec. Sec., Raymond J. Faust, Mich. Dept. of Health, Lansing 4, Mich.

***Sept. 28-30—Rapid City, S. D.**
South Dakota Water and Sewage Works Conference. Annual Meeting (Hotel Alex Johnson). Exec. Sec., W. W. Towne, Division of Sanitary Engineering, State Board of Health, Pierre, S. D.

Oct. 2-6—Atlantic City, N. J.
American Transit Association. Annual Convention (Hotel Traymore). Gen. Sec., A. W. Baker, 292 Madison Ave., New York 17, N. Y.

Oct. 2-6—Boston, Mass.
The Association of School Business Officials. Annual Convention (Hotel Statler). Sec.-Treas., H. W. Anderson, 306 E. Lovell St., Kalamazoo, Mich.

***Oct. 5-7—Dickinson, N. D.**
North Dakota Water and Sewage Works Conference. Annual Convention (Hotel St. Charles). Sec.-Treas., Jerome H. Svore, State Health Dept., Bismarck, N. D.

Oct. 6-8—Winnipeg, Manitoba, Can.
National Citizens' Planning Conference of Canada. Annual Meeting (Hotel Fort Garry). Exec. Dir., Alan H. Armstrong, 56 Lyon St., Ottawa, Canada.

***Oct. 9-11—Roanoke, Va.**
League of Virginia Municipalities. Annual Meeting (Hotel Roanoke). Exec. Sec., Harold I. Baumes, 902 Travelers Bldg., Richmond, Va.

***Oct. 10-12—Springfield, Ill.**
Illinois Municipal League. Annual Convention (Hotel Leland). Exec. Dir., A. L. Sargent, 537 South 4th St., Springfield, Ill.

Oct 9-12—Oklahoma City, Okla
American Water Works Association—Southwest Section. Annual Meeting (Hotel Biltmore). Sec., L. A. Jackson, Mgr., Municipal Water Works, Municipal Auditorium, Little Rock, Ark.

Oct. 10-12—Cleveland, Ohio
American Society of Planning Officials. Annual Meeting (Hotel Statler). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

Oct. 10-13—Pittsburgh, Pa.
International Municipal Signal Association. Annual Convention (Hotel William Penn). Sec., Irvin Shulsinger, 8 E. 41st St., New York, N. Y.

***Oct. 11-13—Milwaukee, Wis.**
American Water Works Association—Wisconsin Section. Annual Meeting (Hotel Schroeder). Exec. Sec., L. A. Smith, Supt. of Water Works and Sewerage, City Hall, Madison 3, Wis.

***Oct. 12-13—Des Moines, Iowa**
League of Iowa Municipalities. Annual Meeting (Hotel Fort Des Moines). Sec., Max A. Conrad, Tama Bldg., Burlington, Iowa.

***Oct. 16-19—Seattle, Wash.**
American Chamber of Commerce Executives. Annual Conference. Sec., Mr. V. L. Hitzfeld, GAPD, The Milwaukee Road, Room 711, West Monroe St., Chicago 3, Ill.

Oct. 17-19—Pittsburgh, Pa.
Water Conference of the Engineers' Society of Western Pennsylvania. Tenth Annual Conference (Hotel William Penn). Chairman, H. M. Olson, Hotel William Penn, Pittsburgh, Pa.

Oct. 17-20—Boston, Mass.
Federation of Sewage Works Association, and New England Sewage Works Association. Joint Meeting (Hotel Statler). Exec. Sec., W. H. Wisely, 325 Illinois Bldg., Champaign, Ill.

***Oct. 19-21—Winston Salem, N. C.**
North Carolina League of Municipalities. Annual Convention (Hotel Robert E. Lee). Exec. Sec., Mrs. Davetta Steed, 1009 Raleigh Bldg., Raleigh, N. C.

Oct. 23-26—Cleveland, Ohio
National Institute of Governmental Purchasing. Annual Meeting (Hotel Cleveland). Exec. Dir., Albert H. Hall, 730 Jackson Place, NW., Washington, D. C.

***Oct. 24-25—Roanoke, Va.**
American Water Works Association—Virginia Section. Annual Convention (Hotel Roanoke). Exec. Sec., W. H. Shewbridge, Room 713, State Office Bldg., Richmond, Va.

***Oct. 24-27—San Francisco, Calif.**
Civil Service Assembly. Annual Conference (Hotel Palace). Dir., J. J. Donovan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 24-27—Coronado, Calif.
National Association of Assessing Officers. Annual Conference (Hotel Del Coronado). Exec. Dir., A. W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 24-28—New York, N. Y.
American Public Health Association. Annual Meeting (Hotels Statler and New Yorker). Exec. Sec., Dr. Reginald M. Atwater, 1790 Broadway, New York, N. Y.

Oct. 24-28—Chicago, Ill.
National Safety Congress and Exposition of the National Safety Council. Annual Congress (Hotels Stevens, Congress, Palmer House, Sherman, Morrison). Gen. Sec., R. L. Forney, 20 North Wacker Drive, Chicago 6, Ill.

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Municipal and Civic Publications

Water Treatment

THE USE OF COPPER SULPHATE IN THE CONTROL OF MICROSCOPIC ORGANISMS—*By Frank E. Hale, Ph.D., Phelps Dodge Refining Corp., 40 Wall St., New York, N. Y., and 230 N. Michigan Ave., Chicago, Ill. 1948. Fifth Edition. 44 pp. No charge.*

This booklet, prepared by a manufacturer of copper sulphate, may be considered authoratative in its presentation of algaecidal methods by the use of this chemical. The first edition was printed in 1925. Since then, further advances and efforts to keep step with modern research, have made the need for new editions evident. Those responsible for water supply and treatment will find this book invaluable.

Pipe Flow Tables

MEASUREMENT OF WATER FLOW THROUGH PIPE ORIFICE WITH FREE DISCHARGE—*By Layne and Bowler, Inc., Memphis, Tenn. 40 pp. Tables. No charge.*

A handy, pocket-sized reference that has been revised and reissued by this company, explaining the Layne Pipe Orifice Meter method of computing water flow. Original calibrations were conducted in the hydraulic laboratories of Purdue University, Lafayette, Ind.

Motor Manners

EMILY POST'S MOTOR MANNERS—*By National Highway Users Conference, Inc., National Press Building, Washington 4, D. C. 1949. 46 pp. Copies supplied at cost to interested groups for distribution through their own channels. Less than 1,000, 10 cents per copy. Price schedule available.*

A "bluebook of traffic etiquette" designed for the average motor-car driver, which should be of some assistance in making the use of streets and highways more convenient, pleasanter, and safer.

Western Research Roundup

PROCEEDINGS, WESTERN GOVERNMENTAL RESEARCH ASSOCIATION, EIGHTH ANNUAL CONFERENCE—*Office of the Secretariat, 117 Library, University of California, Berkeley 4, Calif. 1949. 42 pp.* $1.

Some plain talk about research and research reports, their handicaps and importance to public administrators, is contained in these conference proceedings. A good deal of information on West Coast research activities is imbedded in the talks and discussions by representatives of the governmental agencies and educational institutions who attended the conference.

County Subdivision Review Guide

COUNTY REVIEW OF SUBDIVISIONS IN PASSAIC COUNTY—*Passaic County Planning Board, County Administration Building, Paterson 1, N. J. 1949. Mimeo. 15 pp.*

A report, presented as a guide to land developers and municipal officials, which describes how the Passaic County Planning Board is undertaking to review all subdivisions within the county and is making recommendations to the local platting authorities, the local governing bodies or the local planning boards.

Articles on Revenue Bonds

REVENUE BONDS—*"Municipal Finance," May 1949 issue. Published by the Municipal Finance Officers' Association of the United States and Canada. 32 pp.* $1.50 *per year. 50 cents per copy.*

A collection of articles on revenue bonds and municipal financing with revenue bonds which should prove of special value to those interested in revenue bond financing.

Airport Runway Thicknesses

AIRPORT PAVING.—*U. S. Department of Commerce, Civil Aeronautics Administration, Washington, D. C. May 1948. Tables, Graphs. No charge. 54 pp.*

A carefully prepared text showing how to calculate the thickness of rigid and flexible airport-pavement runways and taxiways. The discussion gives a practical approach to this subject and allows the designer the opportunity to use easily understood and easily interpreted figures. The recommendations for pavement joints and reinforcing follows conventional practice, yet are broad enough to encompass most of the more recent design recommendations. It is a very useful report.

Housing Authority's Community Facilities

COMMUNITY ACTIVITIES, 1949—*New York City Housing Authority, 63 Park Row, New York 7, N. Y. 27 pp. Mimeo. Available without charge upon application to the Authority's Information Division.*

A report on the health, welfare, and recreation facilities of 21 permanent and 8 temporary public-housing projects in New York City. The report shows that the Authority is providing space for 60 additional centers—30 children's and the same number of community centers—in 30 new public-housing projects, all of which are expected to be opened before the end of 1950. The report emphasizes that the Authority will continue to provide community facilities, but that the responsibility of operating them belongs to the public and private social agencies. The Authority's policy is to place the facilities on the borders of the projects so that the people in the neighborhood can also use them.

Water-Sewage Glossary

GLOSSARY OF WATER AND SEWAGE CONTROL ENGINEERING—*American Society of Civil Engineers, 33 West 39th St., New York, N. Y. 274 pp.* $2.

This new "dictionary" for the sanitary engineer has been produced under the joint sponsorship of the American Public Health Association, the American Water Works Association, the Federation of Sewage Works Associations, and the American Society of Civil Engineers. It contains nearly 3,000 words and phrases used in the water- and sewage-works fields. Their definitions are the joint opinions of some 20 leading sanitary engineers and health authorities.

Design of Theaters and Auditoriums

THEATRES AND AUDITORIUMS—*By Harold Burris-Meyer and Edward C. Cole. Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y. 1949. 228 pp.* $8.

An analysis of theater and auditorium design is contained in this handsomely illustrated new volume, written mainly for members of the theatrical profession and professional architects. Detailed consideration is given to the production of shows, whether legitimate, operatic, or cinematic, and to the demands of theatrical presentation in different situations. The authors discuss existing conditions, requirements of audience traffic inside and outside the theater, comfort and safety of the audience, power, heat, air conditioning, the acting area, backstage operations, scenery, stage machinery, lighting, production and many other problems.

The book discusses school and other noncommercial theaters, and there are a number of photos of the Municipal Theater at Malmo, Sweden, and several theaters in other countries. These point to the lag in the United States in the erection of up-to-date theaters, whether community or privately owned. They would prove a stimulus to the vital form of culture expressed in the drama and other theater arts.

Urban Land Economics

URBAN LAND ECONOMICS—*By Richard U. Ratcliff. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, N. Y. 1949. 533 pp.* $5.50.

This is a definitive volume on "the processes and patterns of land utilization where man and his artifacts are assembled in communities." It is a comprehensive and systematic explanation of the urban land market and its mechanisms, the first such basic statement devoted solely to this field.

The book discusses the housing problem within the land-market framework. Other major urban land-policy issues in addition to housing are considered as economic problems rather than technical, social, ideological, or political issues. However, proper recognition is given to social considerations and they are placed in a logical and understandable relationship with economic factors.

Though no new or radical ideas are put forth in the book, a generally progressive and up-to-date point of view has been adopted, which adds to the value of its integrating approach. The last three chapters on urban land policies and the economics of housing policy furnish sound and considered support for such principles as comprehensive city planning and zoning, urban redevelopment, and public housing. The author effectively explodes the "filtering-down" process as any kind of answer to meeting housing needs. He urges that substandard housing be gradually eliminated through the enforcement of local housing codes, but he recognizes that this cannot be done without positive public-housing and building programs going hand in hand.

Bay Area Industrial Locations

INDUSTRIAL LOCATIONS IN THE SAN FRANCISCO BAY AREA—*By Robert P. Danielson. San Francisco Bay Area Council, Inc., 315 Montgomery St., San Francisco 4, Calif. 1949. 60 pp., plus map.* $2.50.

First study of this type to be developed on the nine Bay counties, this guide to industrial locations is designed to help focus the manufacturer's attention on the locations where suitable vacant land is most likely to be found and thereby lessen the time and expense required for trial-and-error canvassing. The manufacturer is provided in the booklet with basic, factual material enabling him to study pertinent "locational factors" and their patterns as they occur throughout the area.

The industrial make-up of the Bay Area is dissected in maps and commentaries which treat each factor individually. Data are compiled to show the characteristics of each community, comparing it to others within the nine counties, and stressing differences rather than similarities. City and county planning commissions provided basic material on industrially zoned land, supplemented by information from Chambers of Commerce, industrial realtors and field reconnaisance by the author.

Promoting Industrial Districts

THE DEVELOPMENT OF INDUSTRIAL DISTRICTS—*Society of Industrial Realtors, 1737 K St., N.W., Washington 6, D. C. 1949. 45 pp.* $2.50.

Realistic pointers from hard-headed experts in the field are contained in this report on discussions held by members of the Society of Industrial Realtors at their meeting in New York City in November 1948. Speakers included persons who have recently been successful in promoting industrial-district developments.

Municipal and civic-organization officials interested in ways of attracting further industrial development, and planners interested in promoting new town developments, will find much of value in this report.

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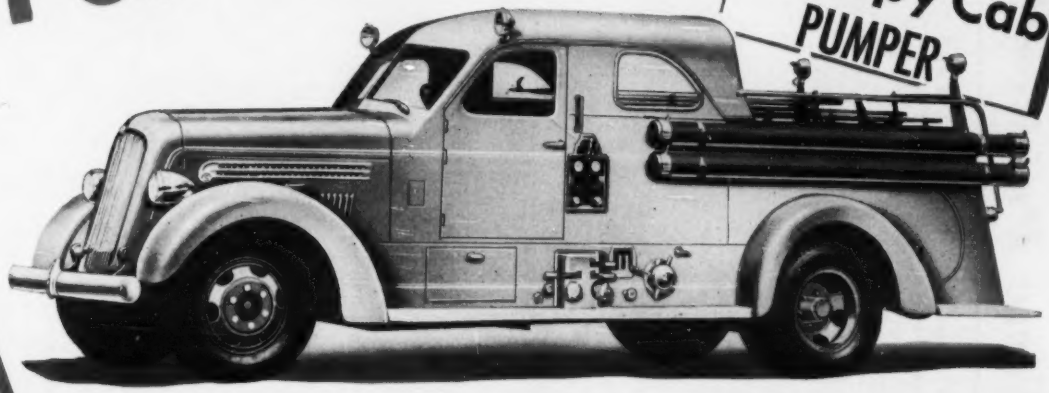

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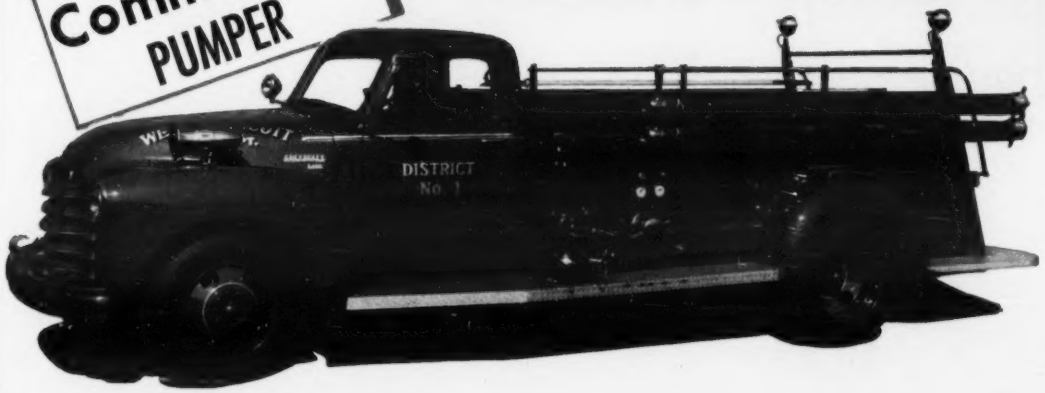

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Municipal Parking Action

PARKING—WHAT CITIES ARE DOING—*American Municipal Association, 1313 E. 60th St., Chicago 37, Ill. June* 1949. 16 *pp.* 50 *cents.*

Another of the numerous reports which have been published in the last several years on the parking problem. This one presents up-to-date information on some specific plans and programs developed in several cities. The brief survey "is intended to help officials consider 'all the angles,' briskly."

Social Areas in Los Angeles

THE SOCIAL AREAS OF LOS ANGELES—*By Eshref Shevky and Marilyn Williams. Published for the Haynes Foundation by the University of California Press, Berkeley and Los Angeles, Calif.* 1949. 172 *pp.* $4.

A technical description and interpretation of the social pattern of Los Angeles, making use of a new method of area analysis based on the relations of status, urbanization, and segregation. In the opening chapter, the character of urban society in California is examined against the background of social trends in the country as a whole. The specific analysis of the population data of Los Angeles is then presented and the observed uniformities and regularities of social characteristics are classified and summarized into types.

The findings are presented in numerous tables, diagrams, and maps. Of particular interest are the tabulations of analytic data from 185 named places in Los Angeles County. Though the book is addressed mainly to sociologists, the far-reaching implications of the materials make it important to administrators, planners, and architects who are concerned with problems of city development.

Housing Conference Report

JOINT ACTION CAN CUT HOUSING COSTS—*Conclusions of the Institute of Housing and Planning Studies, sponsored by New York State Division of Housing, 270 Broadway, New York 7, N. Y.* 1949. 68 *pp.*

The discussions of mayors, architects, engineers, planners, housers, contractors, manufacturers, educators, and labor- and home-finance representatives recorded in this booklet throw a good deal of light on the obstacles to lower-cost production and distribution in the building industry. The conference was sponsored by the New York State Division of Housing in cooperation with nine other agencies. A number of interesting projects in the state and elsewhere are described. Some of the country's foremost experts in the field participated.

Water Treatment

MANUAL FOR WATER PLANT OPERATORS—*By A. A. Hirsch, Instructor in Water Purification, Louisiana State Department of Education. Chemical Publishing Co., Brooklyn, N. Y.* 1945. *Illustrated.* 386 *pp.* $4.

This text resulted from the traveling school for water and sewerage operators conducted by the Louisiana State Department of Education. It covers the conventional fields of water supply and treatment, dividing them roughly into sections devoted to supply, treatment, and distribution. The author states that he attempted to present the material in a manner that will be readily understood by those who have no more than a grammar-school education.

Transportation Plan Report

THE BASIS FOR A MASTER TRANSPORTATION PLAN—*Planning Commission of Baltimore, 400 Municipal Building, Baltimore 2, Md. Report No.* 1. 31 *pp.*

An attractive, well-designed report which is somewhat unique in that it states the problems, the analysis, and the principles on which the Baltimore master transportation plan will be based without any reference to actual plans whatsoever. This was done in order to try to get the people of Baltimore to think in terms of what the city's needs are before they become too excited over specific details.

New Truck Terminal

NEW YORK UNION MOTOR TRUCK TERMINAL—*The Port of New York Authority, 111 Eighth Ave., New York* 11, *N. Y.* 1949. 24 *pp.*

This illustrated brochure describes how the New York Union Motor Truck Terminal, to be opened by the Port of New York Authority on November 1, will be operated. The terminal, and a similar terminal in Newark to serve Northern New Jersey to be opened in 1950, will be the largest in the world. They will reduce street-traffic congestion by motor trucks, expedite delivery of freight to piers, effect savings by motor carriers through central consolidation of their over-the-road freight, and reduce over-all terminal costs in the Port District.

Southern Industrial Location Study

NEW INDUSTRY COMES TO THE SOUTH—*Committee of the South, Report No.* 1, *National Planning Association, 800 21st St., N.W., Washington 6, D. C.* 1949. 32 *pp.* $1.00.

An analysis of the decisions of executives of 88 large corporations who have located new industries in 13 southern states since the end of the war. The report shows that good markets, available materials, and labor supply are the major reasons why the South is rapidly becoming one of the nation's leading manufacturing regions. The Committee believes that the supply of labor, low labor turnover and absenteeism, and satisfactory labor attitudes were more important to the companies studied than the South's allegedly cheap labor.

California Local Revenue Problems

LOCAL REVENUE PROBLEMS AND TRENDS—*By John R. McKinley. Bureau of Public Administration, University of California, Berkeley, Calif. April* 1949. *Mimeo.* 59 *pp.* $1.25.

A concise review of the California local-revenue situation, prepared at the request of California legislators by the independent Bureau of Public Administration.

Policy and Administration

POLICY AND ADMINISTRATION—*By Paul H. Appleby. University of Alabama Press, University, Ala.* 1949. 173 *pp.* $2.50.

A good deal of insight into the nature of the political process can be gained by a reading of this concise volume, which centers attention on the national government and its operation rather than on state or local affairs. The author lists eight different political processes in his review of public administration and its meaning. He asserts that although participation in party organizations is important, the actual process of voting for public officials is only one small part in the total political process. Appleby points out that citizens vote on political acts and procedures by numerous expressions other than the one of actually casting a ballot.

The author concludes by declaring that public administration is policy-making, but it is only one of various policy-making devices in a field where "mighty forces" contend, engendered in and by the society.

Community Film-Use Booklets

HOW TO ORGANIZE AND CONDUCT COMMUNITY FILM WORKSHOPS, HOW TO CONDUCT A SURVEY OF COMMUNITY FILM NEEDS AND RESOURCES, HOW TO EVALUATE FILMS FOR COMMUNITY USE, AND HOW TO ORGANIZE A FILM FESTIVAL—*By Film Council of America, 6 West Ontario St., Chicago* 10, *Ill. Four booklets in "How-to-do-it" series. About* 16 *pp. each.*

Written by various experts in the fields covered, these booklets discuss the following topics: ways and means of planning and organizing workshops so that they may be used as a practical approach to the problem of acquainting organizations in the community with good films and film equipment; an outline of the steps in the fact-finding processes necessary in analyzing a community's film needs; sources of film appraisal and practical methods of film evaluation for group use, and do's and don'ts for successful community film festivals.

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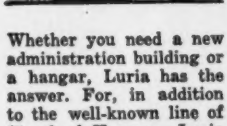

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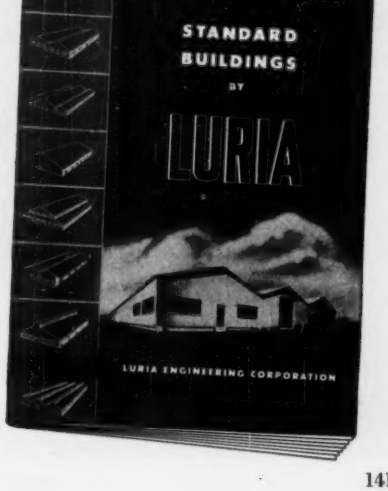

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Planning and Housing Reports

BINGHAMTON, N. Y.—Off-Street Parking Plan for Downtown Binghamton. Broome County Planning Board, 109 County Office Building. April 1949. 28 pp., plus appendices. $1.

BRITAIN—Housing Is Making Progress in Britain. By Allan Flanders. British Information Services bulletin, 30 Rockefeller Plaza, New York 20. May 23, 1949. Mimeo. 5 pp.

CINCINNATI, OHIO—Metropolitan Master Plan, 1948. City Planning Commission, Cincinnati. Illus. Maps. 175 pp. $3.

CLEVELAND, OHIO—Cleveland Regional Geodetic Survey. Report No. 6. By G. Brooks Earnest. Official Surveys and Mapping Committee, Regional Association of Cleveland, Housing Center, West Mall Drive. Maps. 8 pp.

LOS ANGELES, CALIF.—Accomplishments 1948. City Planning Commission, Los Angeles. Maps. Illus. Charts. 48 pp.

MANCHESTER, MASS.—Looking Ahead with the Manchester Planning Board. Manchester Planning Board. Illus. Graphs. Tables. Unpaged.

——Report on a Master Plan and Capital Expenditures Program for the Town of Manchester. Prepared for the Planning Board by F. J. Adams and Burnham Kelly, Consultants, Cambridge, Mass. Feb. 1949. Graphs. Tables. Charts. Mimeo. 47 pp.

——Survey of the Government of the Town of Manchester, Mass. Prepared for the Planning Board by F. J. Adams and Burnham Kelly, Consultants. Oct. 1948. Mimeo. Graphs. Tables. 66 pp.

NEW YORK, N. Y.—New York City's 1950-1954 Requirements for Capital Funds. The City Planning Commission, Department of City Planning, Municipal Building, New York 7. March 1949. Tables. Graphs. Charts. 16 pp.

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NEW YORK—Digest of 1949 Laws Affecting Towns. Association of Towns of the State of New York, Albany. May 1949. 40 pp.

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SEATTLE, WASH.—Annual Report for year ending Dec. 31, 1948. Department of Lighting, City of Seattle. Tables. Graphs. 25 pp.

——Seattle Reports to Its Citizens. The Seattle Daily Times, May 23, 1949. Condensed report on the current operations of the city government, published by the Civic Promotion Commission, County-City Building, Seattle. Illus. Graphs. 8 pp.

How CLEANLINESS is AUTOMATIC with WASTE RECEPTACLES
● Everybody is automatically a member of your cleaning department by conveniently placing Bennett Bilt Waste Receptacles to invite their use. These waste receptacles are sanitary, economical and a major help to cleanliness and neatness. Put them to work for you today.
ONLY WASTE RECEPTACLES HAVE ALL THESE FEATURES
● Non-rusting stainless steel feet eliminate rusting and rust marks
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These are a few of the many features that make Bennett Bilt Waste Receptacles a natural "buy." Quality and every consideration for hard usage are self-evident both inside and outside of these receptacles.
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Independently hinged doors
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CUSTOM METAL CRAFTSMEN SINCE 1906

Cut the Cost OF PARKING CONTROL ABOUT 50%

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*ALFCO TWIN AUTOMATIC PARKING METERS

Park 2 Cars with 1 Meter

*Alfco Twin Automatic Parking Meters cut parking control costs about in half!

- The *Alfco Twin Meter parks two cars instead of one.
- Only half the number of parking meters to install, maintain, and police.
- Only one clock to wind — one coin box — one housing — one meter to control two adjoining parked cars.
- Half the number of meters makes collections twice as easy.

And with this lower cost, the motoring public gets the advantages of the *Alfco Twin bumper-to-bumper parking plan, which affords ample space to enter and leave parking areas. City after city has adopted this model plan for modern parking control. Write today for fully illustrated free literature — with no obligation.

Models available to suit your needs.

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ALFCO

Comments from Readers About Voting Machines

VOTING machines have long since ceased to be a new-fangled way of voting. How remote that era is may be gathered from the remarks of municipal officials familiar with both the paper ballot and the voting machine. A few of these are quoted below.

●

"We've used voting machines exclusively for several years, the county owning them and we paying custodian expense and drayage. Their use has proved popular and law now requires them."—*C. W. Tomlinson, City Clerk, Miami Beach, Fla.*

●

"Our 24 machines save about $1,000 per year and we are equipping the city for full election use. We like them; they are accurate and avoid necessity for recount."—*William J. Lanagan, City Clerk, Waltham, Mass.*

●

"We have two voting machines, one since February 4, 1935, and the other since September 1940. There has been no maintenance expense, there has been a saving in printing costs and in time in counting ballots."—*W. E. Oglesby, City Clerk, North Muskegon, Mich.*

●

"We have 29 voting machines, one for each district. All returns are in 1½ hours after closing of polls, where it used to take 8 to 12 hours. I definitely would not like to see Plainfield go back to the antiquated method of paper ballot."—*Fred Toegel, City Clerk, Plainfield, N. J.*

●

"Our first voting machine was bought in 1903 and replaced in 1947. Without the machine we would have to have two election districts instead of the one. My personal acquaintance with the machine dates from 1923. It is now taken for granted and we should hate to do without it."—*L. B. Richardson, Town Clerk, Cherry Creek, N. Y.*

●

"We have saved a whole lot of time in the 15 years we have owned a voting machine."—*H. J. Bates, Supervisor, Troupsbourg, N. Y.*

●

"After two years' experience with 12 voting machines, a total of 265 was used in the 1947 elections. More machines are needed as with the number available some voters have had to wait for more than an hour."—*Edward T. Weakley, Clerk, Board of Elections, Montgomery Co., Dayton, Ohio.*

●

"City and County of Pierce are fully equipped with voting machines and are very pleased with them. The city has used 125 since 1933 and has saved thousands of dollars."—*Ford H. Downie, Clerk, Ruston, Wash.*

●

"We have used county machines, of which there are 91. They save labor and eliminate the County Board through their accurate as well as prompt results."—*Baily Barnes, Mayor, Waterloo, Iowa.*

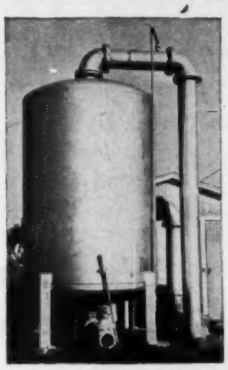
●

"We've used 13 voting machines for nine years, and they give the result of an election in 20 minutes to an hour where previously 6 to 8 hours were required."—*James F. Keller, City Clerk, Cudahy, Wis.*

●

"Twelve machines have been in use here for 38 years and two new ones were purchased for 1949 use. The annual upkeep cost has been practically nothing. Time-saving and convenience has been considerable. The paper-ballot era is nearing its end. People have much more confidence in the use of voting machines in elections. It is the accurate, honest way of voting."—*George E. Gordon, Town Clerk,, Town of Brighton, Rochester 7, N. Y.*

The McCURDY



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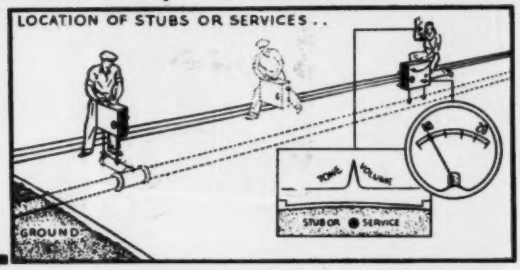
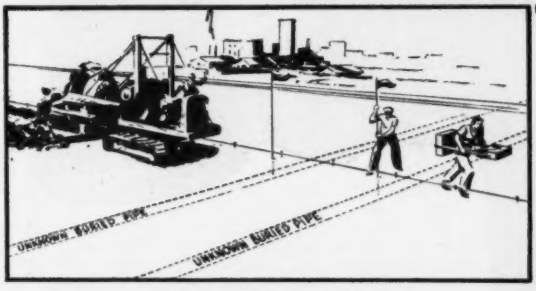


—and easy to locate a hidden pipe and to trace its course:



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Another "ACE" that saves SPADE WORK!

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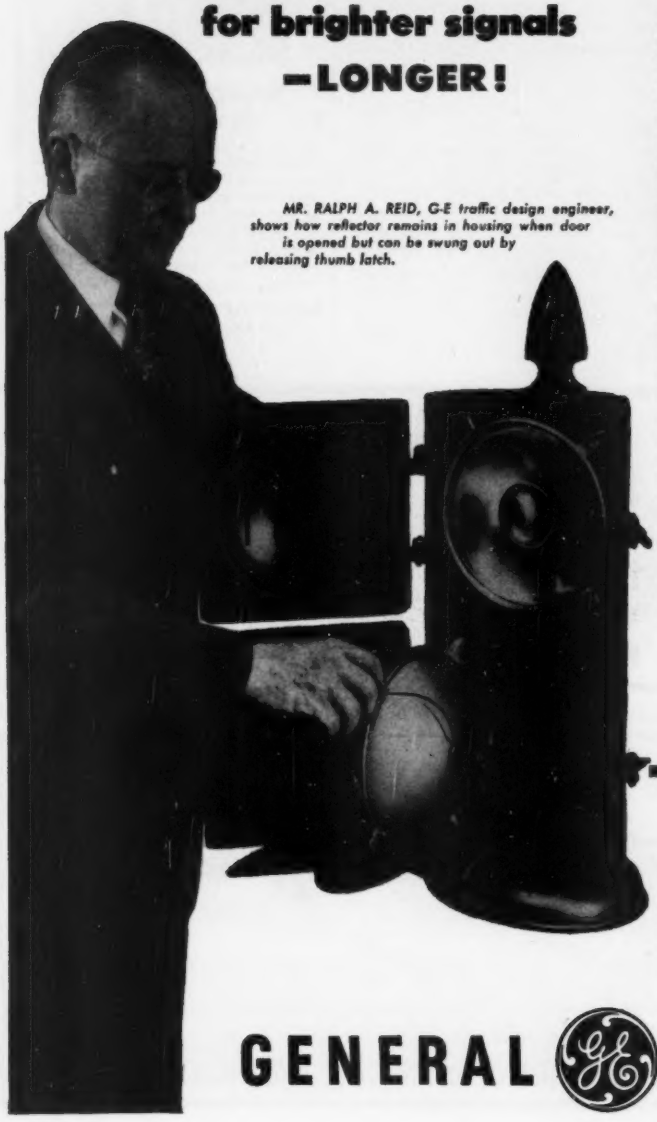
It's double sealed for brighter signals —LONGER!



MR. RALPH A. REID, G-E traffic design engineer, shows how reflector remains in housing when door is opened but can be swung out by releasing thumb latch.

Take a look at this adjustable traffic signal and we know you'll agree it's the finest General Electric has ever made.

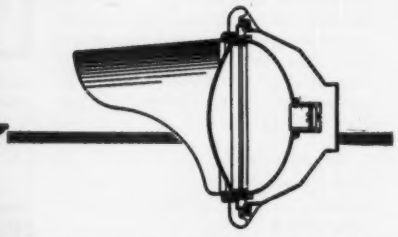
Double Sealing—A unique combination of four gaskets forms two separate seals against dust and moisture entering the optical system—another unusual G-E feature—and one that *keeps* light effectiveness high and maintenance low.

Plus the most effective optical system ever offered for traffic signals. Uses a special sagged-glass reflector of unusual accuracy. With specially designed lens, meets and even surpasses I.T.E. performance specifications. Minimizes false indications.

Die-cast Aluminum—Signal housing and door assembly are die-cast of aluminum for accuracy, long life and good appearance.

And—real versatility—Adjustable signals are made up of single, self-contained signal sections. With this uni-sectional construction, a single signal section, or complete signal faces of two or more sections can be made up—for one to four or more directions.

For full details including dimensions and prices, write for bulletin GEA-5071, "Traffic Signals." *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



Woven impregnated cotton-wicking gasket seals door to housing. Forms the first line of defense against dust and moisture.

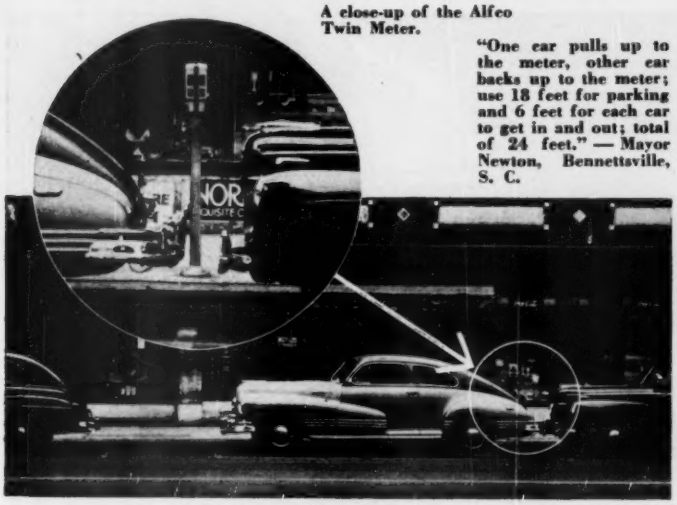
Three rubber gaskets seal lens to reflector holder, holder to reflector and reflector to socket—making the optical system, itself, dust and moisture tight.

GENERAL ELECTRIC

453-45

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings



A close-up of the Alfco Twin Meter.

"One car pulls up to the meter, other car backs up to the meter; use 18 feet for parking and 6 feet for each car to get in and out; total of 24 feet." — Mayor Newton, Bennettsville, S. C.

Two Cities Talk About Their Twin Parking Meters

From South Carolina:

In Bennettsville, S. C., about one year ago we installed one hundred Twin parking meters manufactured by International Meters, Inc., a subsidiary of the American-LaFrance-Foamite Corp. of Elmira, N. Y. Our population is conservatively estimated at 6,000 plus.

They are progressive one to five pennies, one-nickel machines. On the average these hundred meters collect $165 per week and will more than pay for themselves within one year. There has been no confusion and we will probably install fifty more in the near future.

This Twin meter encourages pair-parking of cars, as shown in the photographs, leaving more space in front of the car ahead and more space back of the other car, and facilitates getting in and out. They have solved our parking and traffic troubles.

WALTER M. NEWTON, Mayor
Bennettsville, S. C.

From Wisconsin:

In Portage, Wisc., on December 1, 1948, we installed Twin parking meters, and we have been very happy over our choice. During the first month the youngsters annoyed us with gum, paper clips, and things of that sort, but they seem to have tired of this activity.

Pair-parking of cars, natural with these meters, gives considerable space between the front and rear bumper of each pair. After the first few weeks, the people caught on to the method and it is rare to find a car incorrectly parked. During the winter, when the streets were covered with snow and ice, and the parking lines obliterated, people used the meters and parked as though the parking lines were visible. Since their installation and during the winter, total collections of the 132 meters averaged $265 per week; the largest week, $320 and the smallest $190.

In our city (population 7,000 in 1940) the members of the Police Department make all collections, and report defects to the Fire Department, which does all the repairs. If the mechanism needs to be removed from the meter posts, it is taken by the police to the fire headquarters, where a mechanic furnishes a new mechanism to keep the meter in operation. The two departments are working very well together in this respect.

R. O. KLENERT,
Secretary,
Portage Parking Commission,
Portage, Wisc.

New Covering Protects Damaged Floor Surfaces

The United Laboratories, Inc., 16814 Euclid Ave., Cleveland 12, Ohio, has a new product, Quartex, which is applied directly over the old asphalt concrete floor surface to a depth of about ½ inch, providing protection against alkalis, oil, grease, fats, and other floor-destructive elements.

Able to withstand heavy loads, Quartex-treated flooring is ordinarily ready for use within 36 hours.

APCO Water-Jacketed Turbine Pumps

The Aurora Pump Co., 66 Loucks St., Aurora, Ill., is making a line of single- and 2-stage Apco water-jacketed turbine pumps that are designed with extra deep stuffing boxes for the handling of high-temperature and highly volatile liquids.

Features of the pumps are excellent performance on high-head, small-capacity duties, no vapor binding nor metal-to-metal contact within the pump. Practically constant capacity is attained over wide head variation, and the water jacketing and deep stuffing boxes reduce the temperature of any liquid leakage to prevent flashing or vaporizing of the leakage upon reaching the atmosphere. This cooling effect also preserves the packing and avoids shaft scoring. The pumps are designed to compensate for expansion and contraction due to handling high-temperature liquids.

New Underwood Executive Knows Tax Accounting

George J. Longueville has been appointed national sales manager of Underwood Corp. Accounting Machine Div., according to an announcement by W. F. Arnold, vice-president and general sales manager.

G. J. Longueville

Mr. Longueville joined the Underwood Corp., 1 Park Ave., New York City 16, in 1925, and since 1926 has been connected with the company's accounting machine sales organization in San Francisco, Fresno, and New York.

Mr. Longueville has been consistently interested in the adaptability of the Underwood Sundstrand accounting machine to municipal tax work. "The machine," he says, "having but ten keys, being equipped for automatic multiplication, pointing off and printing, is simple to operate, fast, and accurate. By accurate I mean that the operator and the taxing agency are provided with a visible proof of correct work for every line printed on the tax roll, the unit tax-ledger card and the tax bill. It is particularly suitable for modern streamlined tax accounting and associated records such as payroll, water billing, appropriations, etc."

YOU CAN BE **SURE**.. IF IT'S
Westinghouse

OV-20 SIMPLIFIES CAR SERVICING AT CINCINNATI UNION TERMINAL

After the day's run, grimy passenger cars are cleaned and serviced faster, more efficiently under OV-20 street lighting units. These flexible luminaires direct the light from high angles to the narrow corridors between the cars. Compared to conventional floodlighting installations OV-20's were found to do a better lighting job and, in addition, prove less costly to install and maintain.

Look to the Westinghouse OV-20 to solve your specialized lighting problems. Either mercury or incandescent sources may be used.

For further information, call your local Westinghouse distributor or write for Booklet B-3876, Box 868, Pittsburgh, Penna.

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PLANNED
LIGHTING
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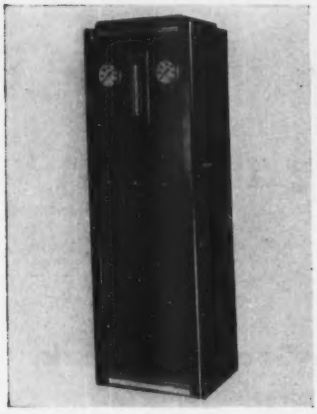
Simplified Chlorinator Gives Accurate Control



The Rato-Chlor chlorine dispenser manufactured by the Fischer & Porter Co., Hatboro, Pa., is a dry vacuum chlorine dispenser that uses no water seals, bell jars, poppets, or similar devices.

Chlorine from the cylinder, drum, or tank-car is filtered first to remove gum-forming hydrocarbon impurities that might be present to deposit "taffy" in working parts. It is then delivered to the Rato-Chlor unit at a controlled pressure of -20 inches water column. The flow rate is set by adjusting a packless, needletype regulating valve and is measured accurately by a Flowrator meter calibrated to indicate pounds per day of chlorine vapor. A differential pressure regulating valve completes the flow control element that maintains the present rate of flow constant. Vacuum is created by an ejector and kept uniform by a vacuum regulating valve. The ejector also mixes a dilute chlorine-water solution which it discharges through a distributor into the stream being chlorinated.

A safety feature is a vacuum operated shut-off valve that automatically interrupts the flow of chlorine in the event of leakage anywhere in the Rato-Chlor dispenser. Chlorine flow is also interrupted when ejector supply water is shut off. The mechanism is adaptable to intermittent shock treatment or continuous chlorination.

Available in 17 standard sizes ranging from a minimum capacity of 10 pounds per day to a maximum capacity of 7,500 pounds per day (the minimum capacity is 1/10 the maximum), the Rato-Chlor is also available on special order in larger sizes and wider ratios of minimum to maximum capacity.

Marshall Elected

Robert E. Marshall has been elected secretary of the Worthington Pump and Machinery Corp., Harrison, N. J. succeeding the late C. Neal Barney.

Robert E. Marshall

Mr. Marshall has been with Worthington since 1947 as a member of the Legal department, counselor on Industrial Relations and assistant secretary. His headquarters will be at the corporation's New York City offices at 2 Park Ave.

Makes 2,4-D More Effective In Hard Water Areas

The weed killer 2, 4-D gains effectiveness in hard-water areas if it is used in solution with Versene, according to the studies made by the Bersworth Chemical Co., Framingham, Mass., manufacturers of the product.

Recent research has indicated that the variations in the degree of success of 2, 4-D solutions for weed control are probably due to the degreee of water hardness found in different districts.

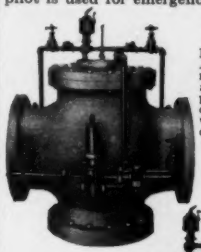
Even moderate water hardness not only causes the formation of the insoluble sludge in 2, 4-D solutions that clogs spraying equipment, but also affects the weed killing power of the 2, 4-D. Also, previous experimental work on 2, 4-D was based on the assumption that the relatively insoluble salt of 2, 4-D which does not participate in hard water is as lethal to weeds as the more soluble salts. This has not proved to be the case. The 2, 4-D is not absorbed directly by the plants.

Versene conditions hard water to allow the use of the more effective soluble 2, 4-D salts. This makes it more readily absorbed by the plants. It also eliminates 2,4-D sludge precipitates and subsequent clogging of spraying equipment.

Additional information plus a simple hard-water testing kit can be obtained from the Bersworth Chemical Co., Framingham, Mass., on request.

ROSS AUTOMATIC VALVES

Altitude Valves for tank and reservoir, with two sets of controls — Automatic Hydraulic and Electric Remote Control. Hydraulic pilot normally operates the valve, while electric pilot is used for emergency only.



Model 40-DAWR Double Acting Valve may be operated by electric pilot regardless of elevation of water in tank or reservoir.

Model 30 AWR Single Acting Valve may be controlled in same manner.

Model 40-AWR Single Acting semi-throttling valve will close on reversal of flow.

Established 1879

ROSS VALVE MFG. CO. Incorporated

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Air Curtain Guide Plates

For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines without coming in contact with the surface.

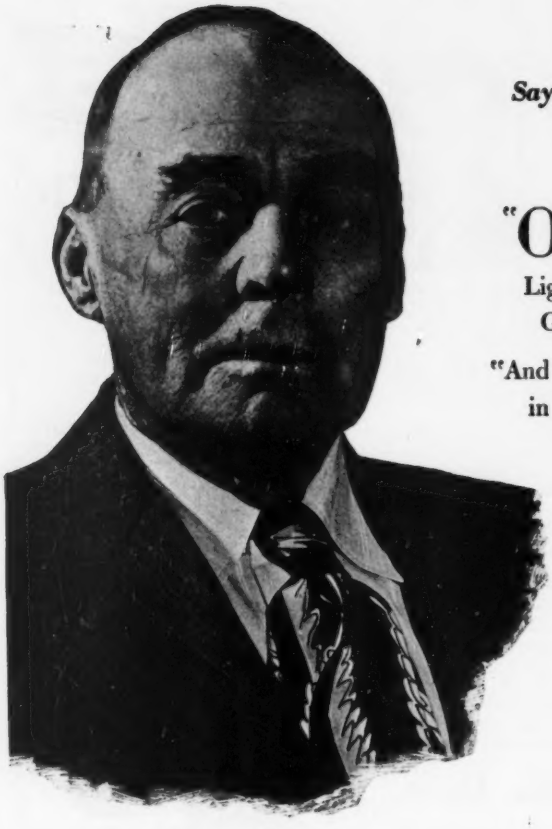
Special striping guns by DeVilbiss, air-actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway Zone-marking material is applied through K-C equipment than through any other make.

TRUCK-MOUNTED AND PORTABLE EQUIPMENT AVAILABLE.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio

"You can see what we think of Modern Street Lighting..."



Says Commissioner **George W. Clark,**
Yakima, Washington

"OVERNIGHT visitors to our city comment invariably on our Modern Street Lighting installation," says Commissioner George W. Clark of Yakima, Washington.

"And quite frequently, they mince no words in denouncing the dangerous, inadequate street lighting conditions existing in their own community.

"Naturally we are proud of our new street lighting system," continues Commissioner Clark. "It benefits every one of our townspeople by safeguarding lives from traffic accidents, discouraging juvenile delinquency and crime, and enhancing both commercial and residential property values."

What does this mean to *your* community? Just this—Modern Street Lighting provides that *extra* protection your citizens have a right to expect—at a price they can afford to pay.

FOR MORE FACTS

Write for your free copy of "A Planned Program for Better Street Lighting."

The Street and Traffic Safety Lighting Bureau, 155 East 44th St., New York 17, N. Y.

General Filter's Board of Directors

General Filter's Board of Directors: Lee Rogers, Layne-Minnesota; J. P. Lawlor, General Filter Co.; S. L. Olson, Layne-Texas; A. W. Ross, Layne-New York; M. H. Anderson, General Filter Co.; T. M. Ragsdale, Layne-Central; A. G. Schreiber, General Filter Co. In our May issue, this was erroneously captioned as the Layne & Bowler Board.

The General Filter Co. of Ames, Iowa, recently affiliated with Layne and Bowler, Inc., Memphis 8, Tenn., in order to supply a water conditioning service along with the latter company's well-drilling and pumping service now offered on a national scale.

The water conditioning aspects include iron and manganese removal, water softening by either the Zeolite or lime-soda ash process, aeration, and other similar related services.

Executive Changes At Westinghouse

To achieve a more complete top-management staff, Gwilym A. Price, president of Westinghouse Electric Corp., Pittsburgh 30, Pa., announces the appointment of James H. Jewell as vice-president in charge of all sales and marketing on a company-wide basis.

John M. McKibbin, a recently-elected vice-president and former head of advertising and sales promotion, now is general manager of consumer products with responsibility for operation and distribution of the Appliance Division and the Home Radio Division at Pittsburgh. John K. Hodnette, vice-president and head of the Transformer Division at Sharon, Pa., becomes general manager of industrial products with headquarters at Pittsburgh.

New Film from Johns-Manville

Johns-Manville, 22 E. 40th St., New York 16, N. Y., has completed a film entitled "Underground Arteries—the Story of Transite Pipe" which is available for showing at town meetings and to lay or technical groups. It demonstrates the importance of pure, fresh water and the role played by supply and distribution lines.

Geist Re-elected President

Walter Geist has been re-elected to his eighth term as president of the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. All officers and directors of the firm were also re-elected.

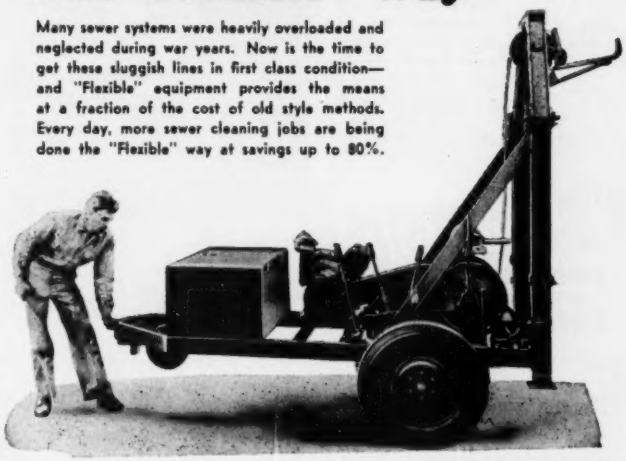
The Silver Lining To Dutch Elm Blight

Elm diseases may be responsible for saving many more trees than they destroy, according to M. W. Staples, field supervisor of the Davey Tree Expert Co., Kent, Ohio, who reports that many communities—alerted to the threat of Dutch elm blight and other diseases such as phloem necrosis—are becoming more conscious of their trees and taking better care of all of them as a result.

One of the important phases in tree care is replacement, of particular value in the elimination of weak-wooded trees such as soft maples.

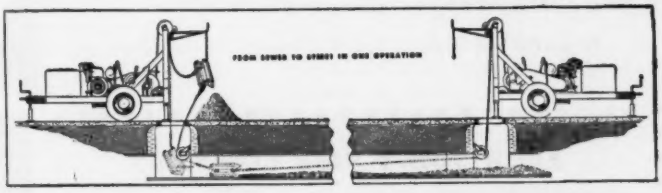
"FLEXIBLE"
POWER BUCKET MACHINES
Clean Sewers The "Flexible" Way

Many sewer systems were heavily overloaded and neglected during war years. Now is the time to get these sluggish lines in first class condition—and "Flexible" equipment provides the means at a fraction of the cost of old style methods. Every day, more sewer cleaning jobs are being done the "Flexible" way at savings up to 80%.



FLEXIBLE POWER BUCKET MACHINE

POWER — DEPENDABLE OPERATION — SPEED — SAFETY — ECONOMY — LONG WORK LIFE



FLEXIBLE SEWER-ROD EQUIPMENT CO.

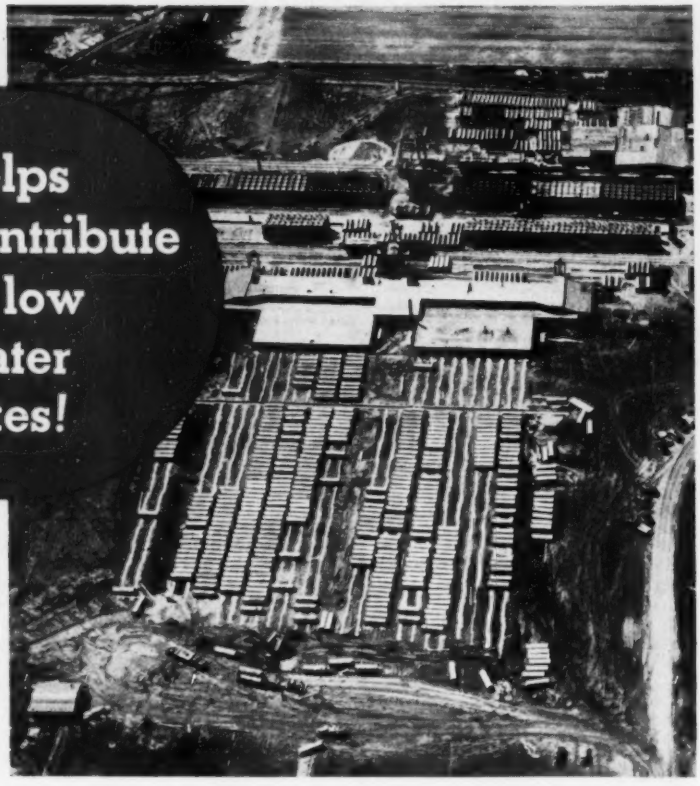
9059 Venice Blvd., Los Angeles 34, California

141 W. Jackson Blvd. Chicago, Ill. — 401 Broadway New York 13 — 147 Hillside Ter. Irvington, N. J — P. O. Box 165 Atlanta — 2011 Central Ave. Memphis, Tenn.

801 E. Excelsoir Blvd. Hopkins, Minn. — 29 Cordon Ave. Roslindale 31, Mass. — P. O. Box 447 Lancaster, Texas — 41 Greenway St. Hamden, Conn.

3786 Durango Ave. Los Angeles 34, Calif. — 909 N. Homewood Ave Pittsburgh 8, Pa. — 4455 S.E. 24th Ave. Portland 2, Ore.

LOCK JOINT PIPE helps contribute to low water rates!



A temporary Lock Joint pipe plant at the site. Use of local labor and materials returns to the community a large part of the pipeline cost.

Although a modern water supply system represents a sizeable investment, sound engineering makes it possible to keep water rates at a minimum.

Knowing this, economy-minded water supply engineers specify Lock Joint Reinforced Concrete Pressure Pipe for mains of 16" or larger. Lock Joint's low initial cost, its long life, its exceptionally high carrying capacity and its negligible maintenance cost assure the utmost service for the consumer's dollar.

Water works officials who have installed Lock Joint pipe lines point to these lines as the most economical in their entire systems.

We shall be glad to discuss your requirements. Simply write or cal our nearest office.

Lock Joint's easy installation means low laying cost.

LOCK JOINT PIPE COMPANY

Est. 1905

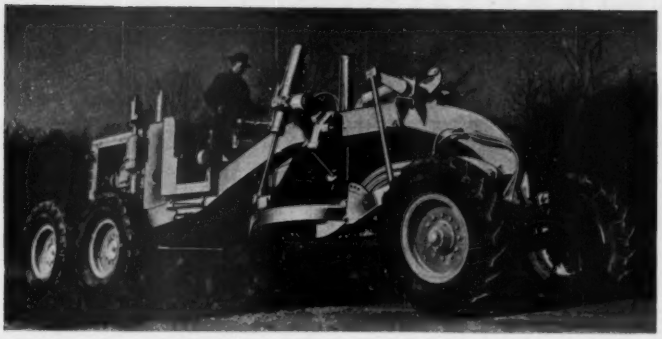
P.O. Box 169, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J. • Turner, Kan.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Colo. • Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

100-hp Motor Grader



W. A. Riddell Corp., Bucyrus, Ohio, is making an extra-heavy-duty motor grader that has 100 hp behind it. The 4D-100 does such diversified jobs as ditching, backfilling, bank-sloping, scarifying, applying black top, and fine grading.

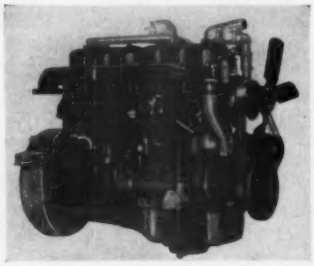
The Warco has a full 360° revolution without removal of the scarifier or teeth; extensive blade reach, and wide clearances under the front axle and transmission. There is less operator fatigue because of the grader's easy hydraulic control.

Three New Diesel Engines From Mack

The END 457, 510, and 672, built for Mack trucks by Mack Trucks, Inc., Empire State Bldg., New York, N. Y., operate on the four-stroke cycle and are designed to provide controlled combustion and maintain low peak pressures.

The combustion chamber design produces extremely high turbulance that results in thorough and complete combustion to exert a sustained pressures and produce a smooth powerful piston thrust. At the same time, the rate of combustion is controlled, avoiding the hammer-blow effect on pistons commonly associated with diesels having uncontrolled characteristics. These engines are smokeless, odorless and free from strain.

Marked fuel economy and an exceptionally smooth-running engine results from variable and automatic injection timing, synchronized to the speed of the engine—provided by the Mack Synchrovance. By this device injection is timed for the ideal amount of advance for each speed and the result is utmost available power and torque at all speeds with minimum peak pressures and less combustion shock.



The 6-cylinder END 672.

Thew Shovel Appoints

The Thew Shovel Co., Lorain, Ohio, has appointed E. E. Esgate as assistant to the general manager. Mr. Esgate is well known in the construction field as a consulting engineer in the construction, logging and paper industry.

TARCO'S

"BETTER-BUILT"

LEAF - TRASH BURNER

Mobile - Balanced - Welded

An all-steel, all-welded handy rolling incinerator. Large easy-running steel wheels. Removable ash tray prevents undesired ash spillage. Swinging-door end folds up and back for convenient loading and dumping. Heat-guarded push handle at comfortable height. Anti-friction wheel bearings. Capacity: 21 cu. ft.

TARRANT MFG. CO.

East Ave. Saratoga Springs, N. Y.

MORE of this ... means LESS of this

Revere ELECTRIC MFG. CO. CHICAGO, ILL. **FLOODLIGHTING for Parks, Playgrounds, etc.**

Long Range Floodlights

The REVERE "2000" Line 18" and 20" Rear Service Floods meet the need of nighttime Sports and Play installations. Sights are provided for adjusting lights exactly where needed. Weather-proof. Easy to wire. Easy to install. Easy to maintain.

Write today for the REVERE Sports Lighting Catalog showing practical layouts for athletic fields and other recreational areas. It's a guide every recreational director should have. For many years the REVERE Organization has been helpful to municipal management in the planning of "Pursuit of Happiness" Programs through Better Nighttime Sports Lighting. We are at your service!

REVERE ELECTRIC MFG. CO.

6015 Broadway Chicago 40, Ill.

it DIGS...it LOADS at tremendous savings

the DEMPSTER DIGGSTER

Whether you need it for excavation work or loading from stockpiles or both, you need the new low production cost of the Dempster-Diggster. Here is the only small shovel that works on a hydraulic, simultaneous or independent crowd and hoist action and completely eliminates tractive effort in loading with wheels. Its variable crowd action at any dipper position means the Dempster-Diggster can dig lower . . . 15 inches below grade. Exclusive hoisting action means it can dig higher . . . digs out a 15 ft. bank. It's the only small shovel featuring such speed and mobility . . . travels at truck speeds on the road . . . gets in tight places on big jobs, freeing large shovels for heavier work. Ideal for the small and medium size excavation jobs yet powerful and fast enough for big jobs.

Stockpiling or loading work is easy for the DEMPSTER-DIGGSTER. Its speed . . . its 15 ft. turning radius . . . its extraordinary dumping reach help the Dempster-Diggster complete the average loading job in an amazingly short time. Dempster-Diggster buckets are easily interchangeable and are availab'e in three sizes. 1 cu. yd. (heaped) with hardened steel teeth for digging . . . 1½ and 2 cu. yd. for loading and stockpiling work. Power is supplied by a heavy duty gasoline or diesel engine. Hoisting, crowding, steering and braking are all 100% hydraulic. For complete information, write today for Folder Number 8154.

DEMPSTER BROTHERS INC.

Large photo above shows Dempster-Diggster loading crushed stone. Note how independent crowd and hoist action permits bucket to follow the slope of the material. At right, top: Digging out high bank. Right, center: Closeup of 1 cu. yd. (heaped) digging bucket. Right, bottom: Dumping crushed stone into truck.

879 Dempster Bldg., Knoxville 17, Tenn.

Change Parking Time Limit With Accessible Meter Lever

Adjustable-time parking meter

The Dual Gearshift automatic, a newly developed parking meter from The Dual Parking Meter Co., Canton, Ohio, makes it easy to change the parking limit from one to two hours, or vice versa—of great value in municipal areas that experience changes in the handling of flow of traffic, changing seasonal conditions, or special events.

A lever made accessible by opening the meter case, and removing the dust cover is re-positioned changing the gearing of the movement to either the 1- or 2-hour time limit. The new design now permits other often-desired changes in timing or coin combination to be made almost as quickly and easily.

The new model retains the principles of automatic, single- or multiple-coin operation and accumulative time.

This Small Chain Saw Stays Sharp Longer

The 19-inch one-man saw developed by the Lombard Governor Corp., Ashland, Mass., is powered by a 4-hp Homelite engine and weighs only 38 pounds. The cutter bar swivels to any desired position in a few seconds.

The model is equipped with the Warren high-speed chain which, being a governed chain, cuts easily. The thickness of the chip removed by the cutter teeth is controlled by a series of depth gages so that there is no forcing or bearing down on the saw. The plow-shaped cutting teeth permit cutting of hard and frozen hard woods at a fast rate per hp, since the teeth are of special alloy steel.

CHIEF D. W. BROSNAN
of the Albany, Ga., Fire Dept., says:

"WE CARRY
SALVAGE COVERS
ON EVERY PIECE OF EQUIPMENT"

Shuredry GREEN-BAK SALVAGE COVERS

"We have used Salvage Covers for more than 25 years, and they are a great aid to us in reduction of loss when we use water. Water damage is responsible for a great amount of fire loss unless the department protects the building, goods, and furnishings by spreading covers to protect them. The public credits the fire department with intelligent effort, when, after a fire, they find their property has been protected from water damage. You are at liberty to quote me as being fully sold on salvage covers for water-damage protection, and they are not expensive if they are properly cared for while in use and after using."

FIRE CHIEFS: In your requisition for salvage covers, be sure to specify Shuredry Salvage Covers, sold by your equipment dealer. They pass every test for water penetration, seepage, resistance to cracking when folded, pliability in coldest weather. Fulton Green-Bak Salvage Covers are light in weight, easy to handle, and are the preference of fire departments everywhere.

CITY MANAGERS: Buy Shuredry Salvage Covers from your fire equipment dealer. Other quality Fulton products that will give you long, economical service are Fulton Triple-Strength Tarpaulins, Fulco Cotton Concrete-Curing Mats.

SHUREDRY Salvage Covers can be obtained through your regular fire equipment dealer.

For Top Dependability Specify

Shuredry
GREEN-BAK
SALVAGE COVERS

For further information, write your nearest Fulton branch.

Approved by National Board of Fire Underwriters and by Factory Mutual Laboratories.

Fulton BAG & COTTON MILLS
Atlanta • St. Louis • Dallas • Denver
Kansas City (Kans.) • Minneapolis • New Orleans
Los Angeles • New York, 434 Broadway • Winter Haven, Fla.

How good are MARK-TIME parking meters?

Ask the city that has them

Mark-Time meters are the last word in mechanical simplicity, ruggedness and long-term dependability. They have set outstanding and unequalled records for performance.

Let our municipality customers tell you why the Rhodemaster — best Mark-Time meter yet — should be the parking meter choice for your city.

NO OPERATING DIFFICULTIES

We have had no operating difficulties with the Mark-Time Parking Meters as they are perhaps the most simple mechanism on the market.

T. E. THOMPSON, *City Manager*
Norman, Oklahoma

BEST BY TEST

The first meters to be installed here were the manual Mark-Time meters, later the city decided to buy additional meters, and 100 other manual meters and 12 automatic meters were purchased. The Mark-Time meter was by far the superior meter in every particular . . . much stronger, more rugged.

W. M. BRADFORD, *Meter Department Supervisor*
Americus, Georgia

WEATHER-PROOF

After the meters were installed the weather turned very cold . . 20 degrees below zero. The meters have caused us no trouble. We are indeed very much pleased with Rhodemaster.

GUY WELLS, *Chief of Police*
Northfield, Minnesota

NET INCOME GREATER

The maintenance department advised me that the meters that they are partial to are the Mark-Time meters. The net income is greater and the maintenance cost lowest.*

CHAS. L. BOWDEN, *Mayor*
Macon, Georgia

*This town speaks from experience, having four different make parking meters.

Photostats of the complete letters from which these excerpts were taken are available upon request.

Rhodemaster PARKING METERS

Ask the city that has them

MARK-TIME
REG. U.S. PAT. OFF.

M. H. RHODES, INC.
30 BARTHOLOMEW AVENUE
HARTFORD 6, CONNECTICUT

Make

Trucks

Self-Loading

The loader platform is automatically lifted and stopped at the desired height.

Almost any truck becomes a self-loading truck when equipped with a Hydro-Loader made by the Stratton Equipment Co., Cleveland, Ohio—and not only does this mechanism lift the load to the exact height desired, but it carries the operator along with the load.

The hydraulic mechanism of the Hydro-Loader is actuated by finger-tip control from the power take-off on the truck transmission. When not in use, the Hydro-Loader lies flat against the side of the truck and adds just a few inches to the width of the truck.

The Model 750 has a lifting capacity of 750 pounds to a height of 7 feet, and Model 1500 of 1,500 pounds to 7½ feet.

Packaged Compressor

The Jaeger Machine Co., Columbus 16, Ohio, is offering its Packaged 60 stationary compressor — a complete and ready-to-operate airpower plant for departments that require a heavy-duty compressor in a 60-cubic-foot-per-minute unit.

Consisting of 2-stage, V-belt-driven air-cooled compressor and a 15-hp electric motor, mounted on an 8.5 cubic-foot air receiver with base, and all electric controls, the compressor is an Air-Plus unit with two low- and one high-pressure cylinders arranged for maximum balance and minimum vibration.

Air-cooled, a water supply is not a problem. Delivering 60 cubic feet of 100-pound air per minute at moderate temperature, the unit achieves a maximum working pressure of 125 pounds. The automatic across-the-line starter and dual controls operate the unit at constant speed with automatic unloading, or automatically start and stop it in intermittent service.

PREMAX

Is Your House Number System Adequate?

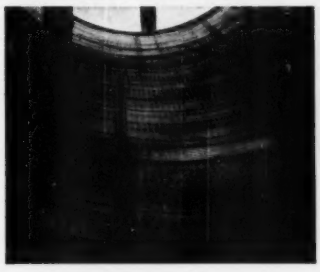
A well-planned system of House Numbering is essential in any city as a means of identifying one home from another and to assure proper delivery of mail.

Even though a city may establish the most modern and approved system, the plan will be of little value unless a proper and uniform type of house number is adopted as the standard.

Premax has supplied 3' and 4' stamped and embossed metal House Numbers to hundreds of municipalities—numbers to meet all requirements of visibility and artistic design.

Write for complete details.

PREMAX PRODUCTS
DIVISION CHISHOLM-RYDER CO., INC.
4946 Highland Ave., Niagara Falls, N. Y.



"GUNITE" LINING SAVES STEEL STACKS

Steel stacks, used in connection with steam power plants, last many times longer when lined with "GUNITE". The composition of the "GUNITE" used can be adjusted to withstand highly acid gases and heat in the stacks.

These pictures show two stages of the lining operation. Photo at left shows our system of reinforcing with mesh and rods securely attached to the inside of the stack. At right, a view across the top of the stack clearly displays the texture of the impervious "GUNITE" lining when the job is completed.

"GUNITE" is used, also, for converting old stacks to new, usually without interruption of normal service.

Details of these "GUNITE" applications, and many others, are described in illustrated Bulletin (D)2400. Write, on your letterhead please, for your copy today.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE CEMENT GUN

HOUSTON doubles its yardage of CONCRETE PAVEMENTS in three years

Metropolitan Houston, one of America's fastest growing areas, is engaged in one of the biggest urban concrete paving projects ever undertaken in the U.S. Within the last three years contracts were awarded for 2,368,997 sq. yd. of concrete streets and alleys, including 366,265 sq. yd. in Houston's great new expressway, shown above.

This gigantic paving project increases by 2½ times the yardage of concrete paving existing in metropolitan Houston in 1945, when there were 1,555,148 sq. yd. of concrete streets and alleys.

In selecting concrete for residential, commercial and arterial streets, metropolitan Houston is providing for today's needs and for expected increases in traffic weights and volumes. For instance, when the first section of the new expressway was opened, traffic volume was 28,000 vpd. It rose rapidly to more than 40,000 vpd. and is expected to reach between 55,000 and 60,000 vpd. when the expressway is completed.

City officials all over America know that concrete usually costs less to build than any other pavement of equal load-carrying capacity. Concrete pavements last longer and need less maintenance. Result: ***low-annual-cost*** service.

For more information in planning your street-paving program write today for a free copy of *"The Design of Concrete Pavements for Municipal Streets."* Distributed only in the U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. A7-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Six Chiefs Discuss Long-Lived Fire Hose

Hundreds of fire chiefs have furnished THE AMERICAN CITY with the footages of fire hose they maintain in their departments and the makes. In a number of instances all the hose is of a single make. For instance, some cities use only Bi-Lateral fire hose, made by Bi-Lateral Fire Hose Co., 20 No. Wacker Drive, Chicago 6, Ill. Some of the chiefs explain why and also how they take care of their hose.

"Hose in our department lasts 18 to 20 years," writes Chief E. H. Kline of Columbus, Ind. His men wash the hose with soap and remove oil or grease from the jacket immediately after use. In the spring it is tested under 200 pounds pressure and in the fall it is flushed with water. Records are kept of each section and Bi-Lateral is used because it is easy to handle, makes a nice load and is durable.

"Records kept of each length of hose show some in service after 18 to 20 years," says Chief Louis Zimmer of the Township of Maplewood, N. J. When the hose has to be retired it goes to the Sewer Department which gets more years' service out of it. "Bi-Lateral has all the pliable features required of double jacketed," continues the Chief, "and we have had very few burst lengths; a first-class quality fire hose."

Hugh F. Fisher of Lansing, Mich., another Fire Chief who keeps records of every section of hose, writes: "We are using Bi-Lateral because it has proved safe, easy to load and handle, and gives us an average service of from 18 to 20 years."

"The policy in Champaign. Ill., is to buy 1,000 to 1,500 feet of 2½-inch hose every year, and I have standardized on double-jacket Bi-Lateral," says Chief R. W. Alsip. In Park Ridge, Ill., hose lasts an average of 17 years, says Chief Norman A. Brown. "After each use it is hung to dry for three days in a heated and ventilated hose tower. It is then taken down, rolled, and stored on a hose rack. We keep records, and each length is tested every year at 150 pounds pump pressure, closed nozzle for a period of five minutes. Bi-Lateral is flexible and easy to pack in a hose bed."

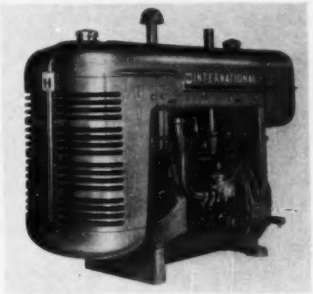
Another Chief asks that his name and city be withheld, but his remarks are useful anywhere. Every section has a number stamped on it and the first digit tells the fire station where it is located. The different sizes of hose are assigned certain ranges of numbers. The hose at Fire Station No. 3 is numbered 380, 381, etc., for 1½-inch and 301, 302, etc., for 2½-inch. Each male coupling is painted a color assigned to each station, such as black for No. 3 and red for No. 2. Thus the men can tell which line to use when ordered to disconnect and pick up a given company's hose.

A hose card file gives for each section the service, conditions, test data and date of purchase. Bi-Lateral hose is used on the basis of these records. Some of this hose, still in service, goes back to 1923, and each year it is tested under 150 pounds.

International Harvester Offers New 16-hp Engine

The International Harvester Co., Chicago 1, Ill., is producing a new 4-cylinder gasoline engine whose 16 horsepowers may be used for powering fans or blowers, oil or water pumps, generators, and various portable units.

Stripped, the U-1 delivers a maximun of 16.5 brake at 2,500 rpm.



SAVE MONEY! SAVE TIME! With the UNIVERSAL CONTROLLED-FLO TRAFFIC LINE PAINT STRIPER with long lasting ALL METAL Paint Spreader.

NO BRUSHES — ENGINE — HOSE — COMPRESSOR — PUMP — JETS

Combination of gravity feed & all-metal, shoe-type spreader eliminates many problems.

Use any zone or striping paint of standard manufacture in this new Universal Controlled-Flo Traffic Line Paint Striper. Indoors or out, on any road surface. ROLLS paint on easily, quickly. Spreader offset to afford clear view of line all times. Finger tip control of flow.

Standard model: All welded steel chassis & 9 gal. tank with funnel bottom to use all the paint. Cast aluminum alloy wheels, all metal spreader. Furnished in widths from 2" to 8" spreaders interchangeable but not adjustable. Weight 60 lbs., 47" long, 24" wide, 38" high. All parts standardized & interchangeable for replacement.

With one spreader $150
Rubber-tired ball bearing wheels $15 extra.

Model B, 5-gallon tank capacity $90
Spreaders: 2" to 4" width $20; 4" to 8" width $25.

Free literature on request

UNIVERSAL MARINE & MFG. CORP.
137 Alexander St., Yonkers 2, N. Y.

STOP WATER HAMMER

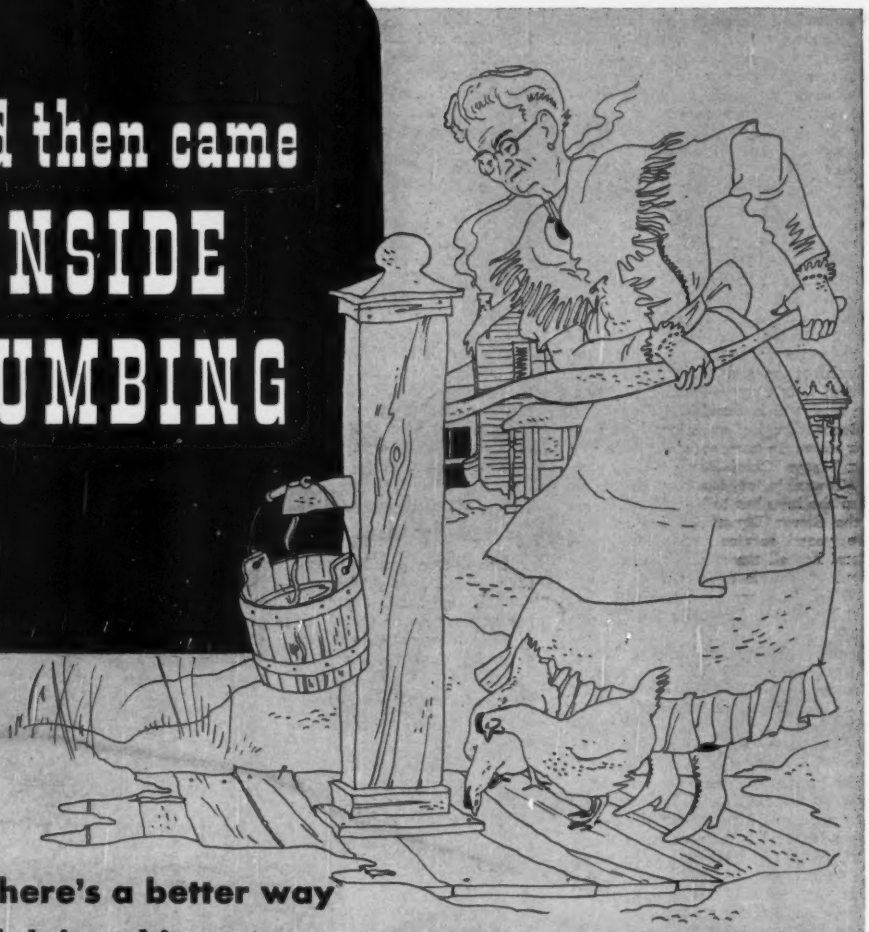
The Williams-Hager Flanged Silent Check Valve is available for every service . . . bodies of Iron, Semi-Steel, Cast Steel, Government Bronze, Stainless Steel or Monel Metal . . . fitted with seats and discs of either Government Bronze, Stainless Steel or Monel. Standard sizes from 1 inch to 20 inches. *Write for new technical bulletin.*

THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

3013 PENNSYLVANIA AVE. · PITTSBURGH (12), PA.

and then came INSIDE PLUMBING



When there's a better way of doing things, Americans do it!

WHAT was good enough for grandma is NOT necessarily good enough for the great majority of modern-minded Americans. That's what keeps America moving ahead . . . enjoying the world's highest standard of living! Outside plumbing, for the most part, is a thing of the past—and today the same obsolescence faces the garbage can.

Hotpoint Inc. *(A General Electric Affiliate)* Chicago, Ill.

NOW COMES THE **Disposall**

Everywhere forward-looking public officials are endorsing Hotpoint's Automatic Electric Disposall® for its safe, sanitary and efficient method of eliminating disagreeable garbage. Modern women want it—public health demands it!

Everybody's Pointing To Hotpoint

All Long Island in a Fog Over Bugs

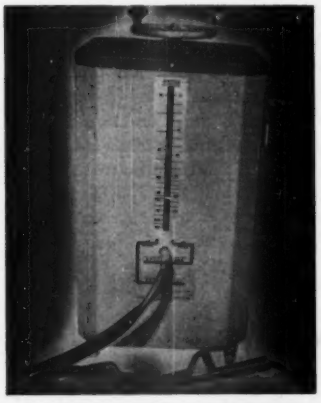
Acting Mayor Gil Hanse (center) examines Babylon's recent acquisition.

Joining the fog machines owned by Jones Beach, the L. I. State Park Commission, and the three big race-tracks, are the TIFA units recently purchased by Suffolk County and the Village of Babylon. The TIFA machine, manufactured by Todd Shipyards Corp., 81-16 45th Ave., Elmhurst, Queens, N. Y., transforms mixtures of chosen insecticides, weed-killers and fungicides in oil by means of a blast of hot air into a dry fog with particles so small that it takes 64 million of them to make up a drop of water. The breeze causes the fog to spread quickly, enveloping everything in its path and leaving an invisible, stainless residue which kills insects and has a lasting effect.

Mounted on a smooth-running caster that permit transportation from one job to another, the Eutecarc is 17 by 17 by 32 inches.

The amperage selector control of current allows selection of very small amounts of current, ranging from 20 amperes to 285 amperes. Other features are easy starting, stable arc characteristics, low spatter loss.

Double-Duty AC Welder For Repair Shops



The Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y., is making a double-duty welder that welds on both light- and heavy-gauge materials.

BRAXMAR BADGES

Standard Badges since 1879

Write for circular illustrating badges for Police, Fire and other City, County and State Officials

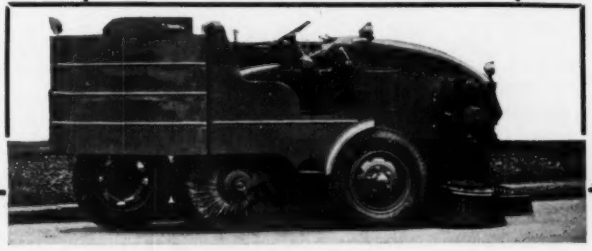
John O. Veit, Pres.

C. G. Braxmar Co., Inc.
216 E. 45th St., New York 17, N. Y.

South Bend

GUTTER-SNIPE

Model "E" Pick-Up Street Sweeper

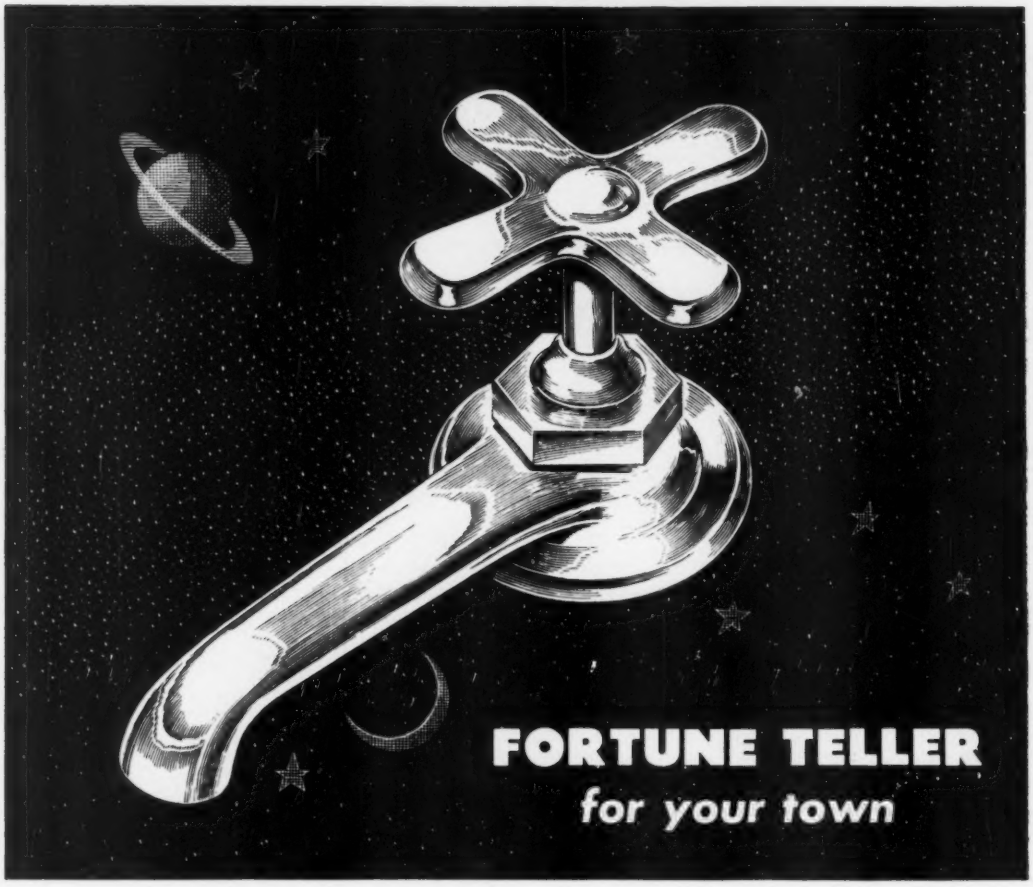


Sweeps 6 feet wide
Holds 1¼ yards dirt
Turns in 19-ft. circle
Can sweep up a 10% grade
Has three sweeping speeds

We also manufacture SOUTH BEND "Big 6" Street Flushers, Bituminous Distributors, Bituminous Maintenance Units, and Gravity and Pressure Sprinklers.

Municipal Supply Company, South Bend 23, Indiana, U. S. A.

Export Department — 44 Whitehall Street, New York 4, N. Y.



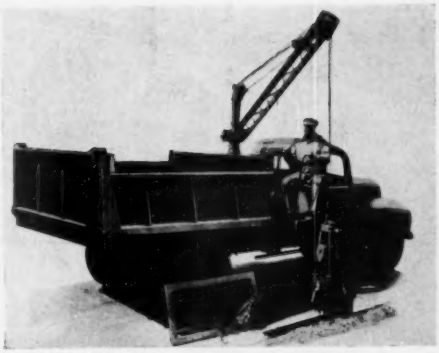
To have your town's fortune told, turn on a faucet. Water *hard?* Then your community may not prosper as it should. For industry shuns towns where there isn't an abundant supply of pure, soft water. Good water speeds up production, cuts operating costs, and raises product quality . . . benefits that no modern factory wants to miss!

The advantages and economies of soft water can be a deciding factor, too, in the flow of new families towards your town! Soft water makes every home cleaning job easier and lowers soap, fuel, and repair bills. Today, good water is a fundamental part of good city planning!

If your municipal water supply presents problems, why not consult Permutit? Our 35-year experience and full line of Water Conditioning Equipment can provide modern, *made-to-order* water for your town. Write for full information to The Permutit Company, Dept. A-7, 330 West 42nd Street, New York 18, N. Y., or to the Permutit Company of Canada, Ltd., Montreal.

Permutit®

FOR OVER 35 YEARS WATER CONDITIONING HEADQUARTERS



Truck-crane combination can be used in catch - basin cleaning and many other maintenance operations.

Gar Wood Utility Crane Performs Many Tasks

The Utility Crane, manufactured by Gar Wood Industries, Inc., Wayne, Mich., was originally designed for catch basin cleaning. Added to its potentialities are such jobs as laying pipe for water and sewerage; setting out trees and shrubs; removing and placing curbstone; stockpiling materials; installing hydrants, handling park benches, picnic tables, and grilles; and digging (with a special clam shell bucket developed specifically for this purpose) on many small jobs usually done by hand and where heavier equipment is not warranted.

When cleaning catch basins, truck engine power lifts the grille, digs out the refuse, and replaces the grille, with the Utility crane taking the place of both a crane truck and a separate dump truck.

The unit incorporates the safety feature of automatic stoppage should the operator be incapacitated while the load is in motion.

Promotions In Builders Iron Foundry

The Builders Iron Foundry, Providence, R. I., has promoted Earl H. Bradley to executive vice-president and Irving O. Miner to vice-president.

Builders Iron Foundry with its associated companies, Builders-Providence, Inc., Proportioneers, Inc., and Omega Machine Co., manufacture the Venturi meter and other instruments for controlling, metering, and proportioning the flow of liquids and dry materials.

Bucyrus-Erie Names Arkansas Distributor

The Lyons Machinery Corp., 904 Broadway, Little Rock, Ark., has been appointed Arkansas distributors for the Hydrocrane manufactured by the Bucyrus-Erie Co., South Milwaukee, Wis.

In addition to the all-hydraulic, truck-mounted crane, Lyons will continue to handle the Bucyrus-Erie line of water well drills, and ⅜- to 2½-yard shovels, cranes, and draglines.

R. J. Warg Appointed Texaco Sales Manager

Richard J. Warg

Richard J. Warg has been appointed Division Sales Manager for Texaco asphalt products in the New England States, with headquarters at Boston. He has been associated with The Texas Co., 135 E. 42nd St., New York 17, N. Y., in its asphalt sales department since 1933. Mr. Warg was previously with the Chicago division.

THE NEW LOOK
for the
MIGHTY MIDGET

BREAK WITH POWER, SPEED, ECONOMY

The MIGHTY MIDGET reduces the cost of breaking asphalt and concrete to a minimum cost that is unequalled by other methods. Tamps backfill at an unbelievable pace; gives high density. All controls within operator's reach. Operates on 105 C.F.M. compressors.

Write for information to Department "D"

R.P.B. CORPORATION
3751 EAST 11th STREET • LOS ANGELES, CALIFORNIA

LITTLE GIANT
POWER SWEEPER

Cuts Your Clean-Up Costs in HALF!

Removes dirt and debris . . . sweeps snow . . . prepares street surface for asphalt paving. Cuts labor costs to the lowest dollar . . . quickly pays for itself. Dependable, time-tested unit . . . hundreds in use. PRICED LOW!

ONE MODEL FITS ALL TRACTORS

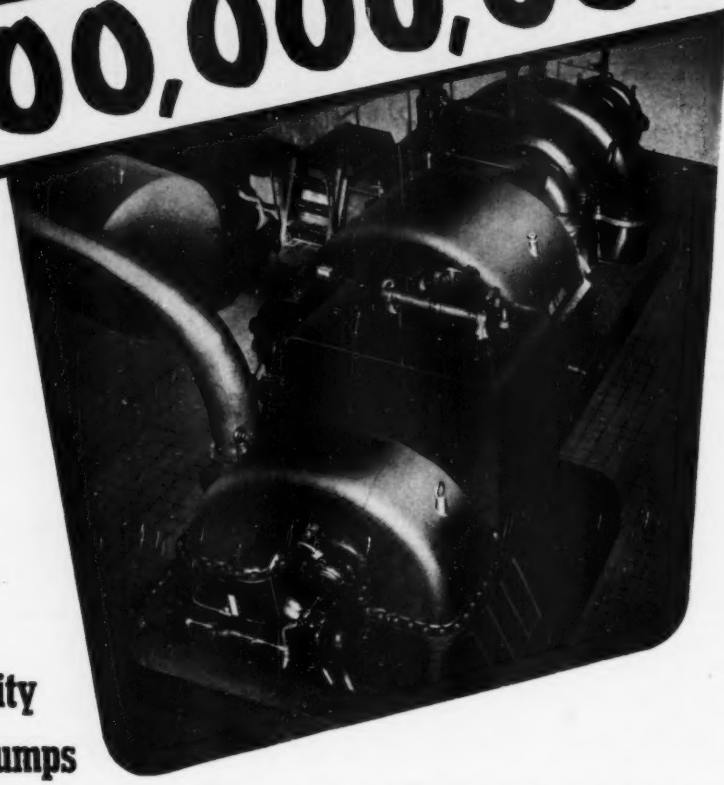
Adjustable rotary broom sweeps at any angle. Use with any tractor . . . driven by power take-off—the tractor furnishes the power. No separate engine to maintain, no operating engineer required on the broom. No clutches or friction drive to wear. Variable broom speed to meet all sweeping conditions. Gears sealed in oil. 5, 6, 7, 8 and 9-foot brooms. Sprinkler attachment available.

Let Our Sales Engineer Help Solve Your Sweeping Problems.

Write, stating your needs. Get complete information, prices. Immediate delivery.

Little Giant Prod. Inc.
1585 N. Adams St., Peoria, Ill.

1,300,000,000



Total Capacity of De Laval Pumps in the City of Chicago . . . 1,300,000,000 Gallons Daily

In the year 1920, the City of Chicago installed its first turbine-driven centrifugal pump – a unit of 60 mgd capacity in the Central Park Station. The performance, trouble-free operation, economy and flexibility of this unit proved to be so satisfactory that additional De Laval turbine-driven pumps were installed in rapid succession.

Today, the City of Chicago is served by a total of 16 De Laval turbine-driven pumps and 5 De Laval motor-driven pumps having a total capacity of one billion, three hundred million gallons daily.

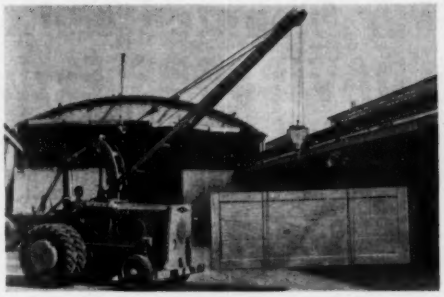
DE LAVAL

DE LAVAL STEAM TURBINE CO., TRENTON 2, N. J.

TURBINES • HELICAL GEARS • CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS • WORM GEAR SPEED REDUCERS • IMO OIL PUMPS

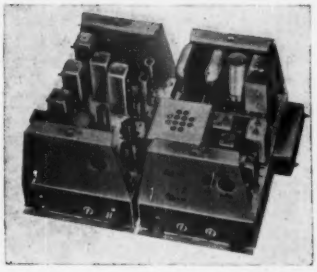
WW7

New 4-Ton Yard Crane



It's called Handi-Crane, mounted on a Minneapolis-Moline UTI tractor, and can reach 18 feet and lift 4 tons. Wheelbase is 79⅜ inches, overall height 125 inches. The tractor is powered by a 48-hp (at 1,300 rpm) 4-cylinder gasoline engine. For the rest of the facts write the manufacturer, Clyde Iron Works, Inc., Duluth 1, Minn.

New Mobile Radio



Lower standby battery drain is featured by new mobile radiotelephone equipment for the 152-162 mc communication band offered by Kaar Engineering Co., Middlefield Rd., Palo Alto, Calif. The instant-heating transmitter consumes 0 power from the battery during standby periods, the receiver uses only 4 amperes; the total, 4 amperes.

This Kaar equipment, the FM-47X receiver and FM-177X 15-watt or FM 179X 50-watt transmitter, is suited for police, fire, public-works, and municipal-utility service.

LARGE

WATER SUPPLIES

Contrary to popular belief, a large water supply does not necessarily mean an expensive one. There are many municipal and industrial sites in this country which are located near underground water supplies of considerable magnitude. These particular sites can afford large but inexpensive water supplies if properly developed by the Ranney Method of Water Collection. Whether your particular site is near a small or large ground water supply can be predetermined accurately by our engineering staff who are ground water specialists.

Your inquiry would be welcome.

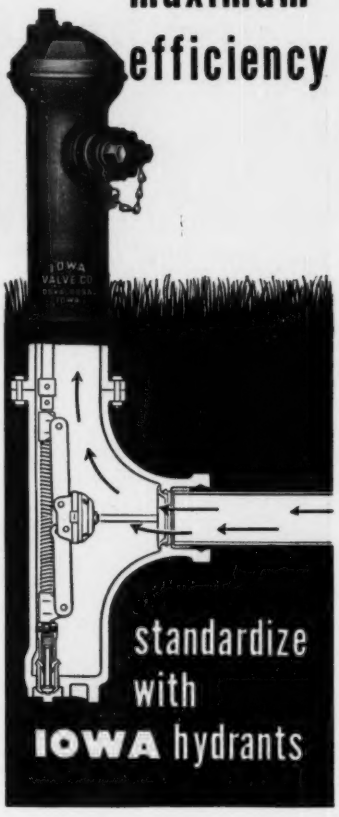
RANNEY METHOD WATER SUPPLIES, INC.

Ranney Water Collector Corporation of New York

Water Supply Engineers and Contractors

Executive and Engineering Offices: Columbus 9, Ohio

for maximum efficiency



Two piece operating nut with special adjustment screw solves the problems of expansion and contraction . . . makes Iowa hydrants easy to operate at all times.

Positive operating mechanical drain valve can be removed along with all other working parts through top of hydrant without special tools.

Fixed position of valve arms makes leaking impossible should standpipe be broken.

Unrestricted water flow gives full pressure at extreme low loss of head.

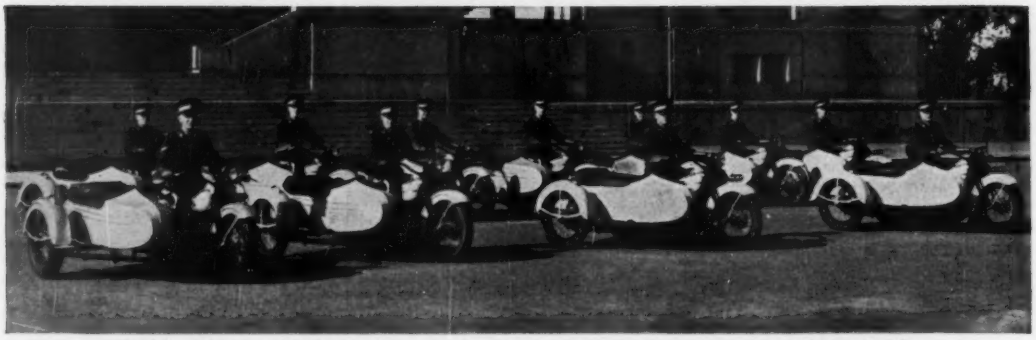
Built to conform to the latest A.W.W.A. specifications.

IOWA
VALVE COMPANY
201-299 N. Talman Avenue • Chicago 80, Illinois

A subsidiary of James B. Clow & Sons

For 30 years...

Royal Canadian Mounted Police have used HARLEY-DAVIDSONS Exclusively!



Royal Canadian Mounted Police detachment on duty patrolling parkways and Government property at Ottawa, Canada.

1929 view of Harley-Davidson equipped RCMP detachment. Sgt. Schane (2nd man from left rear) is now in charge of Motor Transport Division. Mr. Byles, Harley-Davidson dealer, next to Sgt. Schane.

WORLD-FAMED for efficiency in law enforcement, the Royal Canadian Mounted Police have long recognized the advantages of motorcycle patrol. On many assignments, you'll find the Mounties on Harley-Davidson's! In fact, Harley-Davidson Motorcycles have been on duty over 30 years with this noted police force.

In your community, too — law enforcement and traffic control can be aided materially by the use of motorcycles. Accident prevention is becoming ever more difficult . . . with the average age of cars now over 9 years and millions of such old vehicles in daily use on streets and highways. Why not give your traffic force the effective assistance of Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars? They have increased police efficiency and helped reduce accident rates in hundreds of cities, large and small, throughout the world. Your Harley-Davidson dealer will give you complete information. Phone him today!

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL ***SERVI-CARS***

Cambridge Transferred

W. B. Cambridge, who has for the past twenty years been the New York sales manager of the Hersey Mfg. Co., South Boston 27, Mass., has been transferred to the main office as acting sales manager.

Before joining the sales force Mr. Cambridge, who has been with Hersey since 1904, spent several years in the factory, so that his sales experience plus knowledge of actual factory workings has especially fitted him for his new work.

Chain Belt Appoints Moeller

Charles Moeller has been appointed district sales engineer in the Kansas City office of the Chain Belt Co., Milwaukee, Wis.

New Loader Handles Materials in Small Areas

The Model TL-B Tracto-Loader, manufactured by the Tractomotive Corp., Deerfield, Ill., is designed primarily for loading bulk in congested areas. With a 10-cubic-foot standard bucket situated over the driving wheels (steering wheels are in the rear), the unit handles 20 to 25 tons per hour on a 300-foot round-trip haul.

The unit is mounted on rubber tires and the hydraulically controlled bucket can be dumped in whole or in part to a height of about five feet.

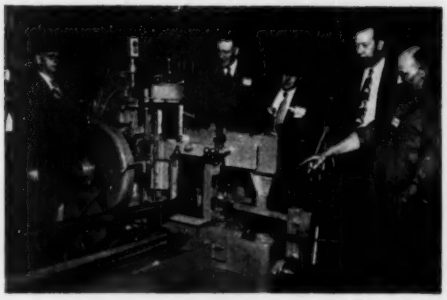
An advantage of this maneuverable piece of equipment is that it can go into a standard 6-foot-wide box car door without backing or jockeying around.

The TL-B is sold and serviced exclusively through Allis-Chalmers industrial tractor dealers, as is the Tracto-Shovel, a front-end loader for the Allis-Chalmers HD-5 crawler tractor, also built by the Tractomotive Corp.

Harold J. Zuske Promoted

Harold J. Zuske has been named to head the original equipment sales of The Leece-Neville Co., Cleveland, Ohio. He has been with the company for 13 years.

Ryerson Completes Philadelphia Plant



Joseph T. Ryerson & Co., Inc., Chicago 80, Ill., has completed its Philadelphia, Pa., steel-service plant at 5,200 Grays Ave., and a big open house was held to celebrate. Here some of the 2,800 visitors watch machine operation.

It's worth your while to use

PITTCHLOR

A high-test calcium hypochlorite containing 70% available chlorine. Granular, free-flowing, non-caking. Packed in 5 lb. cans (9 per case), and 130 lb. drums.

TO CONDITION NEW MAINS

Before placing new mains in service, or following repairs to old mains, Pittchlor makes it easy to disinfect against contamination. Do it in either of two ways, after pipes and fitting have been cleaned:

1. Place dry Pittchlor in mains before admitting water.
2. Inject a 1% available chlorine Pittchlor solution near the beginning of the new section.

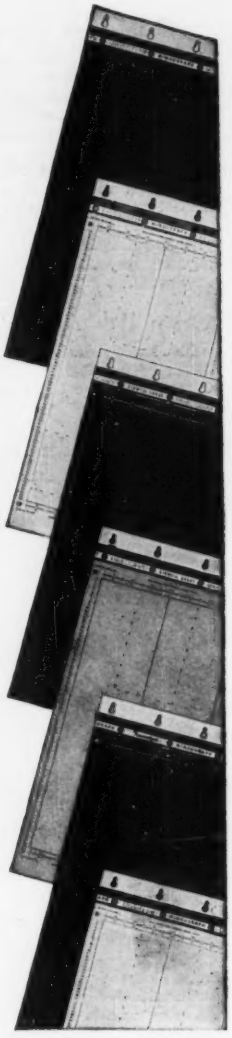
Pittchlor is widely used for on-the-spot uses, such as this. See your jobber or write Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth and Bellefield, Pittsburgh 13, Pa.

COLUMBIA CHEMICALS

PAINT · GLASS · CHEMICALS · BRUSHES · PLASTICS

PITTSBURGH PLATE GLASS COMPANY

a complete line of A.B. Dick Mimeograph Stencil Sheets



For every purse . . . for every purpose! The originator of the famed mimeograph process, A. B. Dick Company, now brings you the benefits of years of experience, research, and testing. Here's a complete line of stencil sheets that make possible more uses and better duplicating at lower cost! Now more than ever, mimeographing is BALANCED duplicating.

Call your nearby A. B. Dick distributor—he's listed in the Where-To-Buy-It pages of your phone book—or write to the address below for full information on these stencil sheets. For use with all makes of suitable stencil duplicating products. A. B. Dick Company, 720 W. Jackson Blvd., Chicago 6, Ill.

A. B. DICK—*the first name in mimeographing*

	USES	ADVANTAGES	SIZES
1300 Series	For medium or short runs of straight typing work. Gives good reproduction of all standard typewriter faces. Will handle signatures and some drawing, but extensive stylus work not recommended.	Low cost makes it practical to mimeograph many jobs heretofore neglected. Soft green color is easy on the eyes—helps in preparing and proofreading.	Legal, letter, note, and specials
1100 Series	Also for medium or short runs, but can handle long runs. Sharp character reproduction. Effective for lines, shading, drawing, handwriting, or any Mimeoscope (R) work.	Low cost combined with versatility. Rich blue color makes proofreading easy. Truly an inexpensive, high quality, all-purpose stencil sheet.	Legal and letter
1000K Series	The top quality stencil sheet for typing. Excellent for systems and procedures work. Will take signatures and handwriting too. Can produce a few, a few hundred, or thousands of copies.	Cost only slightly higher than 1100 Series. Clear yellow color gives high visibility for proofreading. Colored cushion sheet gives a proof, or "flash" copy on the backing.	Legal, letter, note, and specials
2200 Series	A satin film-covered all-purpose stencil sheet that gives extremely high readability. Characters are reproduced clearly and boldly. Handwriting stylus No. 469 can be used with film on. Drawing, lettering, and shading are done with film removed.	Amazingly easy to get excellent typing results. Reduces chances for errors due to erratic pressures. Characters stencilized in broad, clear lines. Equally effective for short, medium, or long runs.	Legal and letter
2300 Series	Another satin film-covered stencil sheet that gives first-rate results with all standard faces of type. Handwriting stylus No. 469 can be used with film on. When film is removed, characters and line work are slightly finer.	A tough stencil sheet to stand heavy typewriter use, yet versatile enough to take fine drawing, lettering, or line work. Attractive yellow with black cushion makes proofreading simple.	Legal and letter
900 Series	Unexcelled for all uses. Superior character reproduction of all standard type faces. Clear copies of handwriting, lettering, ruling and drawing. Excellent for tracing, for forms and systems work. The finest stencil sheet for any mimeograph work.	The king of them all. Proved by years of top service in many fields. A few or thousands of copies perfectly duplicated. Simple to proofread. Easy to work with. Midnight blue helps the eye.	Legal, letter, note, and specials

Byron Jackson Renovates Deep-well Turbine Pumps

The deep-well pumps manufactured by the Byron Jackson Co., Pump Div., Terminal Annex, Box 2017, Los Angeles 54, Calif., have had their faces lifted and their internal structure refined and improved. Henry Dreyfuss, noted industrial designer, collaborated with BJ engineers on the re-design job.

Not only will these pumps look good, but their re-design simplifies access for maintenance and lubrication. Adaptable to belt, gear drive, or direct-mounted electric motors, three assembly sizes are available to fit wells from 6 to 24 inches or larger. Several impeller designs are standard for each size in each of the three bowl types and provide more than 100 individual impeller designs of varying hydraulic characteristics.

General Detroit Purchases Fire Hose Manufacturing Co.

The General Detroit Corp., 2270 E. Jefferson Ave., Detroit 7, Mich., and its affiliate, the General Pacific Corp., have purchased the Fire Hose Mfg. Co. of Paterson, N. J., manufacturer of unlined linen Underwriters yellow-labeled fire hose, according to an announcement by R. L. Braden, the president and treasurer of General Detroit. The new plant will supplement General's other efforts in the fire-hose field as exclusive sales agents for The Boston Woven Hose and Rubber Co.

R. L. Braden

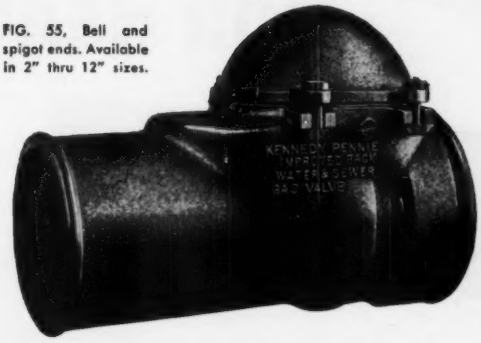
The new plant increases to seven the number of factories owned by General Detroit.

HERE IS POSITIVE PROTECTION AGAINST BACK WATER, SEWER GAS, AND VERMIN IN WASTE PIPES . . .

THE KENNEDY-PENNIE

BACK WATER AND SEWER GAS VALVE

FIG. 55, Bell and spigot ends. Available in 2" thru 12" sizes.

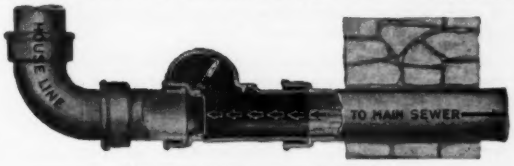


KENNEDY-PENNIE Valves permit full, unobstructed flow of sewage in the open position with no possibility of clogging or stopping up. When outflow ceases, the disc closes tightly, maintaining a tight seal against water or gas, preventing the passage of vermin or germs.

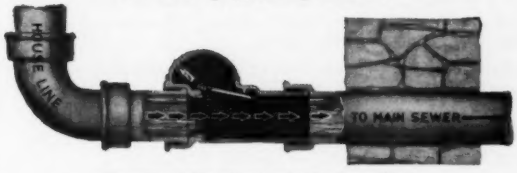
Valve body and cover are KENNEDY Higher-Strength Cast Iron, with a thick asphaltum coating to prevent rust or corrosion. Bolts are rustproofed steel with bronze nuts. Disc and body seat ring are durable bronze.

Each valve is inspected and "smoke-tested" and is properly counterbalanced at the factory for horizontal installation. For vertical or inclined installation, additional counterbalancing is readily done without removing disc from valve or valve from line.

Once installed, the KENNEDY-PENNIE Valve requires no maintenance or attention . . . and lasts as long as the drain pipe itself!



Disc closes tightly, seals against backflow.



Disc opens fully, without restriction for outflow.

Write for Circular 43 • Buy from Your Local Distributor

THE KENNEDY VALVE MFG. CO.
1030 EAST WATER ST.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO • SALES REPRESENTATIVES IN PRINCIPAL CITIES

Big News
FOR HEAVY HAULERS

New "H" model heavy duty GMCs are the biggest truck news of the year . . . and for many years!

They comprise the most complete line of all-new, all-improved heavy duty trucks, gasoline and Diesel, ever introduced at one time . . . 61 basic models with weight ratings from 19,000 to more than 90,000 pounds.

They provide more important new features and advancements than any trucks in GMC history . . . exclusive GMC "Bumper-Built" front end . . . the industry's most powerful engines size for size . . . stronger, safer, roomier cabs . . . improved frames, springs, brakes, clutches, and axles.

They benefit by all the advantages of the truck industry's finest engineering skills and manufacturing facilities.

And they are priced to give substantial savings on the original investment . . . by including needed items of equipment which, in general practice, are added to the base price.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Packed with POWER

Five power-packed gasoline engines, including a big new "707" of 225 horsepower. Two famous GM 2-cycle Diesel engines of 133 and 200 horsepower.

Built to "TAKE IT"

Deeper, stiffer frames . . . heavier, wide-track front axles . . . longer front springs with shock-absorbers standard . . . big, fast-acting brakes.

Cabs Up to 1½ FT. WIDER

More leg room and head room . . . wider doors and windows . . . bigger windshields . . . built-in ventilation . . . snubbed seat action . . . complete insulation.

GMC
GASOLINE • DIESEL
TRUCKS

Low-Cost Radiotelephone

A mobile radiotelephone unit that offers reliability through the use of improved circuits and components has been developed by the Federal Telephone and Radio Corp., Clifton, N. J. Priced at $350, the FT-145-10 has a power output of 10 watts at any frequency in the 152 to 162 megacycle band.

For use by such departments as police, fire, utilities, and repair and maintenance, the radiotelephone was designed to operate for long periods under adverse weather and terrain conditions. Maximum stability and selectivity is assured by vibration-proof coils.

Top tuning enables adjustment of the set without disengaging the unit and "desk-drawer" accessibility plus plug-in connections permits replacement of equipment in a matter of minutes. Drawing only 7.3 amperes standby and 23.9 amperes transmit, the unit can in many cases use existing generators and batteries.

New Bucket-Type Refuse Truck

The Pax-all, manufactured by Woodson Products, 4200 E. Nevada, Detroit, Mich., combines bucket loading with mechanical packing to provide an efficiently operating unit that is priced low enough to fit within the budget of the small community.

Operating equally well when packing loose garbage, boxes and cans, general refuse and rubbish, or ashes, the Pax-all is designed for shorter standard wheelbase trucks. The 12-cubic-yard rubbish-collection unit on an 84-inch CA chassis means not only a savings in initial truck cost and operating costs, but also that the Pax-all can be maneuvered more easily because of the short turning radius.

The bucket is operated from the cab by the driver and unskilled loading personnel cannot damage, jar, or misuse the unit. When the bucket is full and is to be dumped, the driver pulls the operating lever and the bucket raises to the top of the body by means of cables and sheaves. At the top of the body it turns over and dumps its load through a hatch in the body. As the bucket lowers to the rear of the unit again, the packing panel inside the body tightly compresses the newly deposited load automatically. The packing action is generated mechanically and the compression ratio of the mechanical linkage increases in direct proportion to the weight of the load. The hatch cover then opens and closes automatically as the bucket comes up to dump and then lowers.

Preston Strong Millar

Preston S. Millar, president of Eltrical Testing Laboratories, Inc., 79th St. and East End Ave., New York City, passed away suddenly on June 17. Mr. Millar was widely known in the electrical field and illuminating engineering circles.

PEERLESS VERTICAL TURBINE PUMPS

fmc PEERLESS PUMPS

NEW PEERLESS INDIANAPOLIS PLANT IS DEVOTED ENTIRELY TO PUMP PRODUCTION & SERVICE

Here is one of America's newest pump plants—19 acres of modern manufacturing facilities devoted to precision production of horizontal and vertical pumps, located at Indianapolis. Plan with Peerless for pumps plus fast, complete pump service.

CUT OVERHEAD Underground

For your next job consider the flexibility and the efficiency of the Peerless vertical turbine pump.

As a deep well pump, for example, a Peerless pump can assure you of an independent source of clean water from your own well—water that will be of constant temperature, of constant chemical analysis. To cut overhead underground, Peerless turbine pumps embody many exclusive engineering advantages, such as patented Double Bearing-Double Seal bowl construction, all contributing to their extended trouble-free pumping life.

As another example, a Peerless vertical turbine pump utilized as a close-coupled pump, assures you of full turbine pump utility and capacity from short or medium settings. They're ideally suited for installation over pits, sumps or basins or for pumping water from surface sources. The 4 pumps shown above are indicative of this type of service. You can easily visualize their application to condenser cooling, cooling tower service, etc.

Regardless of your requirements, a versatile Peerless vertical turbine pump will squarely meet your pumping demands. Peerless offers widest capacity range, from 15 to 30,000 gpm against heads to 1000 feet. You can have your choice of oil lubricated or water lubricated types and a choice of power drive, direct-connected electric, right angle gear, V or flat belt or combination drives Write for individual Bulletins describing the applications of Peerless pumps to these services.

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
Los Angeles 31, California Indianapolis, Indiana
District Offices: New York 5, 37 Wall Street; Chicago 40, 4554 North Broadway; *Atlanta Office:* Rutland Building, Decatur, Georgia; Omaha, Nebr., 4330 Leavenworth Street; Dallas 1, Texas; Fresno, Calif.; Los Angeles 31, California

Peerless
VERTICAL AND HORIZONTAL
Pumps

"VISIBLE STORES CONTROL helps us realize peak efficiency and substantial savings"

say officials of
ELECTRIC POWER BOARD
of Chattanooga, Tennessee

$30,896 saved on reclaimed parts in 1947 alone — that's just one of the savings achieved by Chattanooga's Electric Power Board through effective administration.

Materially lowered costs of utility administration, while assuring effective, simplified control of the thousands of items needed to maintain efficient service to 54,000 customers—that's the result of the visible stores control record used by the Electric Power Board of Chattanooga, Tennessee.

Thanks to the basic simplicity of this Kardex record, *two girls* perform all control work with speed and accuracy, despite the tremendous variety of parts represented—everything from tiny nuts to massive spools of cable and the poles that support overhead power lines.

Key to the effectiveness of this control system is the Kardex visible margin on the pocket of each record, with graphic signaling of all vital facts: too-low stocks, order points, supplier data, follow-ups necessary and probable period of stock depletion, item by item.

Kardex Stores Control steps up efficiency, lowers operational costs in all phases of Public Works Department administration: water, sewage, buildings, streets, traffic, lighting. Investigate *now*.

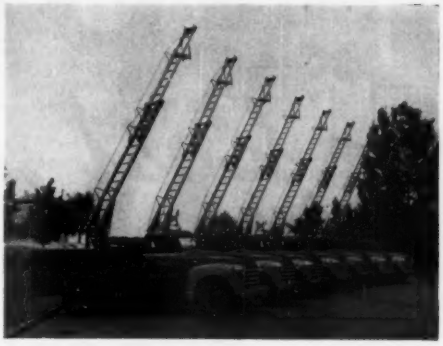
Copyright 1949 by Remington Rand Inc.

SPECIAL GOVERNMENT ISSUE OF SYSTEMS MAGAZINE—FREE ON REQUEST

The Chattanooga Stores Control Plan is fully described in a recent issue of Systems for Government Administrators—authoritative Remington Rand publication on new, efficient record-keeping methods for all branches of government. If you have not already received your copy, call our office near you, or write Systems Division, 315 Fourth Avenue, New York 10.

Remington Rand
THE FIRST NAME IN RECORD SYSTEMS

Seven New Trucks for New York



Seven new service trucks of the State of New York used in highway-light maintenance. The 28-foot 2-section extension ladder rotates 360° and has an adjustable working platform. Of all-steel construction, the body has eight weathertight tool compartments. It is mounted on 1½-ton Chevrolet chassis and was manufactured by the McCabe-Powers Auto Body Co., 5900 North Broadway, St. Louis 15, Mo.

Two Street Luminaires

Two new street-lighting luminaires offered by Westinghouse Electric Corporation, Lighting Div., Edgewater Park, Cleveland, Ohio, feature Universal metal heads. AK-10 is the lightweight luminaire which will take incandescent lamps of 2,500 to 10,000 lumens and mercury-vapor lamps of 11,250 to 21,000 lumens. AK-14 is the heavy-duty for 10,000- to 15,000-lumen incandescents or 11,250- to 21,000-lumen mercury-vapor lamps.

Waukesha Names Sales Mgr.

Fred C. Schulze

Fred C. Schulze has been appointed sales manager of the Waukesha Motor Co., Waukesha, Wis. Formerly assistant sales manager, Mr. Schulze, who has been with the company since 1928, has been active in the purchasing and plant engineering departments of the company.

Blaw-Knox Piping Gets Manila Contract

The power piping division of the Blaw-Knox Co., Pittsburgh 22, Pa., is beginning work on a $450,000 piping contract for the new Rockwell Station of the Manila Electric Co., Manila, P. I.

Included in the award is the furnishing and erection of all piping required for three boilers, each with capacity of 250,000 pounds of steam per hour, two turbine generators, each rated at 20,000 kw, and auxiliary power plant equipment. The main steam piping must meet a steam pressure of 900 pounds at 910° F.

THE MODERN LAWN MOWER SHARPENER

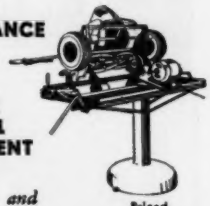
CUTS MAINTENANCE COSTS

•

LOWER CAPITAL INVESTMENT

•

Economically and Quickly Sharpens All Municipal Mowers



Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36-inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

Send for Free Bulletin No. 258

ORDER NOW • IMMEDIATE DELIVERY

MODERN MFG. CO.

160 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

PRECISION in waterworks brass

McDONALD DIAMOND LINE

There's always a reason for leadership and McDonald waterworks brass goods are no exception. McDonald precision manufacture from 85-5-5-5 metals means easier installation, longer life and real economy. 93 years manufacturing skill are behind every Diamond Line product.

The corporation stop illustrated (Plate E-3123) is one of the long list of items produced by McDonald. This Diamond Line stop with eighth bend union coupling has inlet threaded to fit Mueller machine. Outlet end is threaded to fit Mueller machine. Tapped inside to be inserted with outside threaded screw plug. Can be furnished with quarter bend couplings when desired. Sizes—½, ⅝, ¾, 1, 1¼, 1½, and 2 inches. Write for information.

A. Y. McDONALD MFG. CO.

DUBUQUE, IOWA

BRASS GOODS • PUMPS • OIL EQUIPMENT

ELECTIONS *Cost Less* *with* AUTOMATIC VOTING MACHINES

LET US MAKE A SURVEY OF THE SAVINGS POSSIBLE IN *YOUR* COMMUNITY,—THIS, OF COURSE, AT NO COST OR OBLIGATION TO YOU.

Because: PRECINCTS MAY BE CONSOLIDATED

Use of the AUTOMATIC VOTING MACHINE removes all the objections to large voting precincts. Voting is easier and quicker, and the necessity of a long, drawn-out count is removed. Because voting is faster than with the old-fashioned paper ballots, consolidation of small precincts is highly desirable and practical. This results in the saving of the cost of election officials and rent in the precincts eliminated. Some examples of precinct consolidation through installation of AUTOMATIC VOTING MACHINES are:

Baltimore, Md.	from 685 to 471
Buffalo, N. Y.	from 155 to 108
Seattle, Wash.	from 500 to 294
Rochester, N. Y.	from 405 to 339
Oshkosh, Wis.	from 32 to 16
West Allis, Wis.	from 28 to 16
Anne Arundel Co., Md.	from 49 to 18

Because: PRINTING COSTS ARE REDUCED

With AUTOMATIC VOTING MACHINES the cost of printing is generally reduced 50%. This is because one set of cardboard ballot labels is used for all the voters on one machine instead of one ballot for each voter.

Because: EXPENSIVE RECOUNTS ARE ELIMINATED

A permanent record of the votes cast is contained in the counter compartment of the AUTOMATIC VOTING MACHINE and if a recount is requested the totals can be rechecked in a very short time at little or no cost.

—Write—

Automatic Voting Machine Corporation

JAMESTOWN, NEW YORK

— Since 1898 —

T. L. Smith Alliance With Essick Mfg. Co.

The T. L. Smith Co., Milwaukee 10, Wis., announces that it has made a sales, operating, and financial alliance with the Essick Mfg. Co. of Los Angeles, Calif. Bryant Essick, president of the Essick Mfg. Co., has been elected a director of The T. L. Smith Co. and Essick Mfg. Co. has acquired a substantial block of T. L. Smith's common stock. No change is contemplated in the management or policies of T. L. Smith and Mr. Essick will be active in that company only in an advisory capacity and as a member of the Board.

Mr. Essick and Harold E. Smith, president of T. L. Smith, jointly state that there is no intention of consolidating the two firms both of which distribute their equipment nationally through retail machinery distributors, although since the two lines are not competitive and, combined, represent one of the most attractive and complete lines of construction equipment in the industry, cooperation and unification of sales efforts are already being started.

The Essick line of construction equipment includes three sizes of small, portable concrete mixers, mortar and plaster mixers, mixers for concrete products plants, road rollers, portable air compressors and hoists.

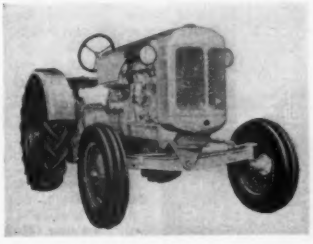
The mixer business of T. L. Smith was started in 1900 by Thomas L. Smith, now deceased. The company is now one of the world's largest producers of concrete mixers.

New Le Roi Industrial Tractor

The Le Roi Co., 1706 South 68th St., Milwaukee 14, Wis., has introduced a 25-hp Centaur CI industrial tractor for loading, backfilling, snow plowing, sweeping, and lifting.

An all-weather cab and lights permit outside winter operations; solid tires, bumpers, and other accessory equipment for material handling make it avilable for indoor use.

The D140 valve-in-head engine gives the CI a power rating that is one of the highest for wheel-type tractors in its class. Low piston speed and replaceable wet sleeve liners provide durability and minimum maintenance cost. A low center of gravity, short turning radius, and uncluttered platform provide safety and ease of handling.



The NETCO CATCH BASIN CLEANER

With Pneumatic Controls

A Necessity For Every Municipality

- Simple
- Positive
- Powerful

PNEUMATIC BUCKET

Although it has large capacity, the Netco Bucket will operate through an opening as small as 16 inches. This Bucket will easily remove sticks, stones, bottles, wire, and other such debris from all catch basins.

These Cities and Many Others Own One or More

Netco Catch Basin Cleaners

Boston, Mass.
New York City, N. Y.
Indianapolis, Ind.
New Brunswick, N. J.
Harrison, N. J.
East Cleveland, Ohio
Binghamton, N. Y.

- The Netco Catch Basin Cleaner can be mounted on any short wheel base truck having at least 8 ft. in back of cab. You can purchase unit separately and mount on your own chassis.
- The Netco Unit can be removed from truck and chassis in 30 minutes.
- The Netco can be operated continuously because the material removed from catch basins is loaded into other trucks. This unit will average 20 to 30 catch basins per 8 hour day.
- The Netco Bucket closes pneumatically, assuring positive and maximum digging efficiency.
- Positive and simple control of pneumatic bucket, boom swing, hoist clutch and boom brake by compressed air.
- The Bucket is lowered and raised by one cable. Only one hose is required to close it, and it is opened by powerful spring action.
- The Netco has a hoisting capacity up to 1500 lbs.

For Complete Details Contact

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

Will YOUR Highway Signs Withstand This Shot Gun Test?

HERE IS ACTUAL FIRST-HAND, VISUAL EVIDENCE that COLUMBIA NON-CORROSIVE PLASTIC HIGHWAY SIGNS are practically indestructible!

A 20-gauge shotgun loaded with #6 shot full choke blasted the METAL highway sign. The pellets badly destroyed the protective covering, penetrated the metal base, and dented the structure of the sign.

A 22 rifle was then levelled and fired at the METAL sign. The bullets went through the METAL sign so tearing the metal and chipping the paint that it was necessary to scrap the sign.

The COLUMBIA PLASTIC SIGN was subjected to exactly the same severe tests! The shotgun pellets left ONLY lead marks on the PLASTIC sign. These marks are easily cleaned off. 22-rifle bullets passed through leaving a hole smaller than the bullet itself. The color was not injured because it is integrally molded throughout the sign.

Only COLUMBIA PLASTIC HIGHWAY MARKERS can withstand such severe punishment. They are practically indestructible! Every sign meets the latest standards and assures the lowest maintenance costs!

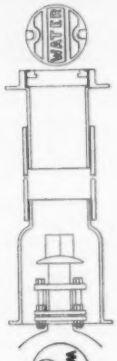
Actual Photograph shows protective coating on METAL Highway Sign destroyed by shotgun pellets and rifle shots. Replacement of the sign is necessary because of mutilation.

Actual Photograph shows no penetration on PLASTIC Highway Sign by shotgun pellets or rifle shots. Lead marks left by flattened shot are easily cleaned off. Sign does NOT require replacement.

GUARANTEE The plastic base material in COLUMBIA SIGNS is GUARANTEED against rust or corrosion for the life of the installation.

Write for
COLUMBIA BOOKLET
It will give you a wealth of up-to-date Traffic Marker information.

COLUMBIA SIGN & SIGNAL CORP.
10030 LORAIN AVE. **CLEVELAND, OHIO**



AMCAST VALVE BOX

New Design for Ease of Adjustment & Installation

- Straight sides of lid stop displacement in traffic.
- Full 5¼" inside diameter.
- Stands erect while being installed.
- Telescoping of top section provides adjustment to grade and protects valve from shocks.
- Wide top flange stops settling.
- Asphalt coated.
- Large base for most valves.
- Also 3-piece boxes for shallow valve setting.

OPELIKA
SERVICE OR CURB BOXES

- New Style Covers
- Bronze Pentagon Screws
- Straight Sides.
- Large Bell Openings.
- Asphalt Coated.
- 2½" Inside Diameter.

We also make the old style slip and screw type boxes for those who have standardized on such styles.

LOW PRICES — QUICK DELIVERY

Give size of valve and trench depth with order.

American Casting Service
1508 S. Kenneth Ave. Chicago 23, Ill.

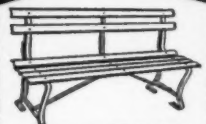
Stewart Chain Link Wire Fence is available in several heights, weights and styles to meet the degree of protection desired.

● Stewart Chain Link Wire and Plain or Ornamental Iron Fences and Entrance Gates are made in a sufficiently wide range to adequately cover the fencing requirements of all classes of public property.

DON'T OVERLOOK STEWART
If your plans call for Iron or Wire fencing

Stewart Plain or Ornamental Iron Fence is made in a wide

variety of designs for all classes of public property.



Stewart All Steel Settee—Durable, attractive—in 4', 5' and 6' lengths.

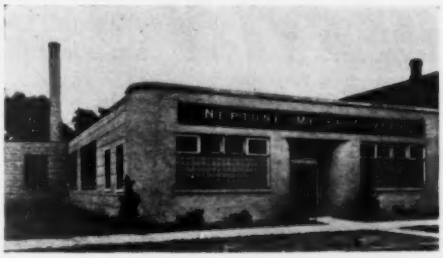
In addition to fence, Stewart produces many other iron, wire and bronze products for the protection and beautification of public property. Catalog sent on request: when writing, mention products in which you are interested.

Stewart IRON and WIRE FENCES

THE STEWART IRON WORKS CO., INC.
1621 Stewart Block
CINCINNATI 1, O.
Experts in Metal Fabrications since 1886

Neptune-Rensselaer Quarters

In order to enlarge its laboratory and service facilities and to provide space for its newly acquired Rensselaer Valve Co. Div., the Neptune Meter Co., 50 West 50th St., New York 20, N. Y., has moved its Chicago branch from 130 N. Jefferson St., to 4048 West Taylor St. The company produces precision Trident water meters and Rensselaer valves and hydrants.



Portable Seal Embosser

A new portable electric machine for embossing official seals of cities, towns, counties and other governmental units on legal documents has been developed by The Todd Co. of Rochester, N. Y. In use, documents are slipped between dies and accurately located through a viewing window. A finger-tip touch of the button produces a clean-cut, uniform seal impression.

New portable electric machine for embossing official seals of cities, towns and counties on legal documents.

for
WATER WORKS ECONOMY

Master meters on vital main-lines are the keys to water works efficiency and economy. How easy it is—and inexpensive—to install

SPARLING
Main-Line Meters

They tell you just what is going on! Accuracy within 2 per cent is guaranteed. For full information, prices, etc., see Bulletin 310 —mailed to you on request.

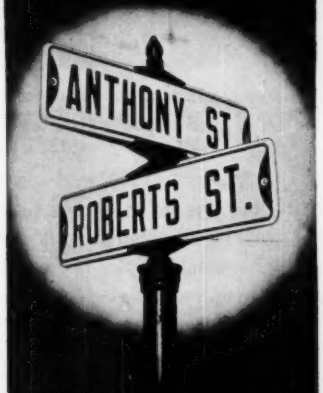
The SPARLING Manufacturer of WATER MEASURING EQUIPMENT

LOS ANGELES 54....Box 3277, Terminal Annex
CHICAGO 8.....1500 South Western
CINCINNATI 2.....622 Broadway
NEW YORK 17.....101 Park Avenue
BOSTON 8.....6 Beacon Street
SEATTLE 1.....1932 First Avenue
DALLAS 1.....726 Reserve Loan Life Bldg.

Vacuum Leaf Loader
Solve your leaf or clean-up problem

Write for leaflet
LEAF LOADER DIVISION
American Structural Steel and Tank Co.
21050 W. 8 MILE ROAD DETROIT 19, MICH.

Beautiful, Legible, Low-Priced
STREET NAME SIGNS



WRITE FOR CATALOG
Cataphote Corporation
TOLEDO, OHIO

Bitumuls HV

REG U S PAT OFF

High Viscosity
Asphaltic Emulsion
for Surface Treatment

Another Product
Pioneered By
Bitumuls

QUIZ for Paving Engineers

How do YOU answer these questions?

1. **Can you hold wet, round gravel or large aggregate with your present binder?**
2. **Does your binder stay on the road, when "shooting" a steep grade or high crown?**
3. **Are your surface treatments rugged, non-skid, and vapor-permeable?**

If your answer to all three questions is "Yes", you must be using *Bitumuls HV*—a "High Viscosity" asphaltic emulsion that is now used by a majority of State Highway engineers, because it really holds the aggregate, large or small, wet or dry.

Precise application is easy. No excess binder to cause fatness or slippery pavements—or to act as a vapor barrier retarding drainage by upward evaporation. You get a non-skid, vapor-permeable seal.

If You have not used "HV", try it on one job—you, too, will adopt it.

1. Stone Held?

—or Ravels?

2. Binder stays put?

—or Runs Off?

3. Rugged & Non-skid?

—or Fat & Slippery?

The ASPHALT Twins

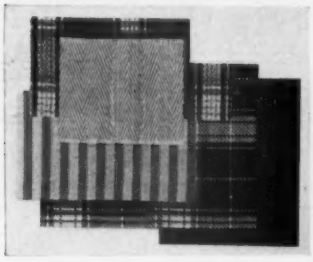
In the West
STANCAL ASPHALT & BITUMULS COMPANY
200 BUSH STREET · SAN FRANCISCO 4, CALIF.
Los Angeles 14, Calif. · Oakland 1, Calif. · Portland 4, Ore. · Tucson, Ariz.

In the East
AMERICAN BITUMULS COMPANY
200 BUSH STREET · SAN FRANCISCO 4, CALIF.
Washington 6, D. C. · Baltimore 3, Md. · Perth Amboy, N. J.
Columbus 15, O. · St. Louis 17, Mo. · Baton Rouge 2, La.
E. Providence 14, R. I. · San Juan 23, Puerto Rico

Ask for our BITUMULS BOOKLETS. They are factual, illustrated, and helpful—a valuable addition to your engineering library.

Bitumuls Penetration Macadam . . ☐
Bitumuls for Maintenance . . . . ☐
Bitumuls Sand-Mix . . . . . ☐
Bitumuls Handbook . . . . . ☐
Hydropel—Admix for concrete . . . ☐
Tennis Courts—Laykold & Grasstex . ☐
Fibrecoat—roof and metal coating . ☐

Improved Plastic Fabric For Seat Covers



A new type of plastic fabric, developed for the seat covering market is announced by John M. Reeves, president of Reeves Brothers, Inc., 54 Worth St., New York 13, N. Y.

Known as Reevon and made from woven filaments of bakelite polyetheylene, this new plastic fabric is the first of its kind perfected from this resin. It is a seat cover for automobiles, transit vehicles, auditoriums, stadium cushions, and for other indoor and outdoor municipal furniture applications.

Reevon remains pliable even in extreme cold. Resistant to moisture, acids, stains, and vermin, it is so light it floats in water. It is cleaned with soap and a damp cloth. It has no odor.

The introduction of Reevon marks an unusual step by Reeves Brothers, well known for more than a quarter century as a manufacturer of quality cotton fabrics under such brand names as Byrd Cloth, Reevecord, Reeves army twill and many other finely-woven combed cotton gabardines, poplins, and broadcloths.

New Address For American Coleman

The American-Coleman Co., which manufactures through its subsidiaries, the American Road Equipment Co. of Omaha, Nebr., and the Coleman Motors Corp. of Littleton, Colo., American motor graders Coleman 4-wheel-drive trucks, and Coleman conversion units for converting standard trucks to 4-wheel-drive, has moved its general offices to 340 W.O.W. Bldg., Omaha, Nebr.

The company recently sold towing equipment valued at close to a million dollars to the U. S. Air Force. The units were Coleman truck-mules for towing the B-36 bomber.

Cartwright Joins Wm. Bros

H. A. Cartwright, well-known in the asphalt field as a designer of spray bars and distributors, has joined the research and engineering group of the Wm. Bros Boiler and Mfg. Co., Minneapolis, Minn.

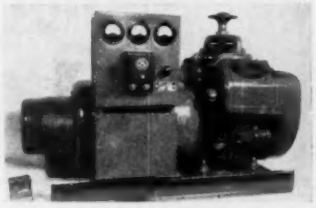
Formerly with the Cartwright Distributor Co. and the Cartwright Asphalt Equipment Co., Mr. Cartwright will work with the expansion of Bros' asphalt road machinery program.

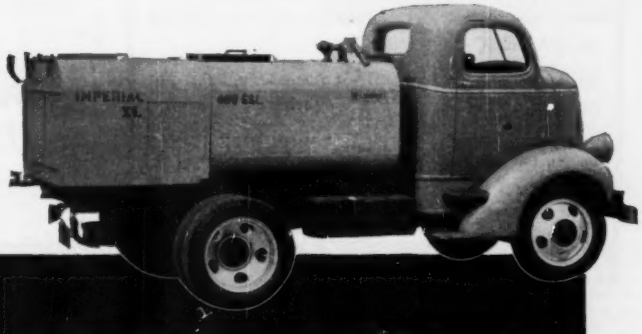
Standby Power Plants

Powered with 1-, 2-, and 4-cylinder, air-cooled engines that eliminate the radiator and anti-freeze solutions, the new line of power plants for standby power and emergency supply manufactured by the Kato Engineering Co., Mankato, Minn., may be installed in freezing atmospheres.

The engines are equipped with high-tension magnetos, permitting easy hand cranking to eliminate starting batteries and their maintenance. All models may be obtained with electrical cranking on specification.

Available with or without automatic voltage regulator, with natural gas carburetors on specification, the plants run to 1,800 rpm. The Katolight generators have capacities ranging from 5,000 watts to 200 kilowatts at 60 cycle, and are also available in frequencies ranging from 25 cycles to 400 cycles.





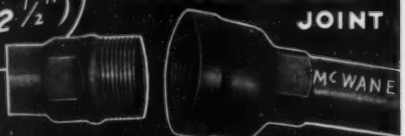
Hardie High Pressure Shade Tree Sprayers are available in a wide range of capacities and in many different assemblies for convenient use with motor trucks and tractors. Many desirable economies are possible by combining Hardie units with existing motor equipment. Write for Catalog data. The Hardie Mfg. Company, Hudson, Mich., Los Angeles 11, Calif., Portland 9, Oregon. C. W. Lewis & Son Ltd., Grimsby, Ont. Canada. Export Dept. Detroit 26.

Hardie DEPENDABLE SPRAYERS

THE ONLY SPRAYER THAT IS COMPLETELY LUBRICATED

LAYS THE FASTEST—LASTS THE LONGEST!

This OVERSIZE (2½") THREADED JOINT



CUTS INSTALLATION TIME AND COST

The oversize THREADED joint with hex grips holds the wrench firmly and makes it easy to lay McWANE 2" Cast Iron Pipe.

Skill and experience are not necessary. All you need to do is "Screw 'Em Together!"

McWANE 2" THREADED CAST IRON PIPE IS THE CENTURY-LASTING PIPE FOR SMALL WATER MAINS

McWANE CAST IRON PIPE Co. Birmingham

McWANE 2" CAST IRON PIPE

SPEEDY? "like a hot knife through Butter!"

THE LOW COST WAY TO INSTALL ANY PIPE

Even the toughest earth formations, like rotten rock, are no obstacle to Hydrauger operations. In fact, Hydrauger has fewer limitations, especially in time and costs, than trenching; and it is more certain than pipe-pushing, particularly if the pipe is coated, wrapped or of large size.

Write for Catalog No. 8 TODAY!

HYDRAUGER CORP., Ltd.
681 Market Street
San Francisco 5, California

OPEN HOLE Hydrauger*

* Reg. U. S. Pat. Office

HY-13c

EARTH BORING TOOL

THE MOST EFFICIENT UNIT ON THE MARKET.....

the 84-HD KETTLE

Making road repairs today can be costly if equipment is inefficient, so why not use the Kettle that road maintenance men know from experience will do a better job faster. The Littleford 84-HD Kettle will heat faster, will operate more efficiently because it has patented features to assure better operation. The 84-HD will handle tar or asphalt and will speed up road repairs. For further details write for Bulletin No. 1.

LB LITTLEFORD

LITTLEFORD BROS., INC.
500 E. PEARL ST., CINCINNATI 2, OHIO

KILL Weeds At The Roots!

Write for literature explaining these tested DOLGE products fully and giving specific directions for their use.

DOLGE 55 WEED KILLER

Goes to the root of your weed problem. Use in economical solution *where no vegetation whatever* is desired. Sterilizes the soil so wind-blown seeds cannot normally sprout in it. Penetrates to the roots—and KILLS! This modern chemical weeding saves money and hours of back-breaking labor.

E.W.T. SELECTIVE WEED-KILLER (2-4-D)

Works down thoroughly to the roots of brush, dandelions, plantains, poison ivy, ragweed, sumac and other plant pests, but will *not* kill most turf grasses. Best used for maintaining beauty of lawns and fairways.

The C. B. DOLGE CO.
WESTPORT, CONNECTICUT

Power Scythe Endorsed By Purchasing Officer

A Jari Power Scythe trims the high grass.

"We use a Jari Power Scythe to keep the grounds trim at the Home for the Aged and Infirm, Blue Plains, D. C. It is invaluable for use over terrain too rough for reel-type equipment, is also well adapted for use in trimming around shrubbery, flower beds, fences, buildings, ditches and numerous other places inaccessible to power-driven reel-type lawn mowers, and also it is exceptionally good for mowing grown-up weeds or grass. It is easy to operate and economical."—R. M. Brennan, Purchasing Officer, Washington, D. C. The scythe is made by Jari Products, Inc., 2934-G Pillsbury Ave., Minneapolis 8, Minn.

Walker Sales Director For Jacobsen Mfg. Co.

M. J. Walker has been appointed director of sales for the Jacobsen Mfg. Co., Racine, Wis. This newly created position brings under one head the sales and merchandising policies of Jacobsen and its subsidiaries, the Worthington Mower Co. of Stroudsburg, Pa., and the Johnson Lawn Mower Corp. of Ottumwa, Iowa.

Before his appointment, Mr. Walker was vice-president in charge of sales of Pincor Products and sales manager of the Eclipse Lawn Mower Co.

Attention!

City Officials

Refuse dumping areas *DO NOT* need to be a health menace.

CLOROBEN

Supplies the Answer

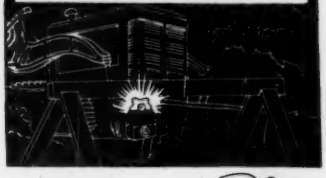
NO INSECT BREEDING
RAT BREEDING
FOUL SMELLS

Write us for details on how to use Cloroben to give your refuse dumping area a good health record.

THE CLOROBEN CORPORATION
15 EXCHANGE PLACE JERSEY CITY 2 N. J.

The Pioneers of Up Sewer Treatment

Night Warning At All HAZARDS—BARRICADES



Big Beam 400-F ELECTRIC FLARE

Night wrecks and accidents caused by hazards and barricades can be averted by warning lights and emergency flares. There are a thousand such uses for the Big Beam Electric Flare with red Fresnel lens. Dependable in any weather, set or hang anywhere in any position, knocking over will not interfere with its operation. A flip of the switch gives the choice of either a steady or a flashing flare. Interchangeable clear Fresnel lens converts it to a regular lantern. As easily serviced as a flashlight.

See your supplier, or write direct

U-C LITE MANUFACTURING CO.
1056 West Hubbard Street, Chicago 22, Ill.

How often are you refilling sweeper broom cores?

AFRICAN BASS FIBRES

INDIAN PALMYRA STALKS

Fresh, high quality fibres make a big difference in sweeper mileage you get between broom core refills. We are able to offer you the best fresh quality fibres in all types and sizes. Your inquiry will receive our prompt attention.

MOUNTAIN HICKORY SPLINTS

STEELWIRE CHINA SPLIT BAMBOO

The OTTO GERDAU CO.

Established 1872

82 Wall Street, New York 5, N.Y.

PROVED

HERE'S MORE POWER TO YOU!

across the nation for ~~almost~~ OVER 3 years

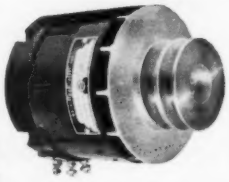
There are no other time-tested A-C Systems that will give you performance like this!

- Alternator systems can provide 50 amperes (or more) with engine idling and full output at all driving speeds to keep batteries fully charged while supporting the unlimited use of accessories.
- Weigh 60% less than D-C equipment of comparable rating.
- Require less space and less support.
- Require less maintenance and operate with less danger of burnout because Alternator has no commutator with commutating brushes or no rotating armature windings to cause sparking.
- Eliminate radio "fade out" and range reduction caused by weak batteries—hold radio noise level to an absolute minimum and prolong life of radio equipment.

THE ORIGINAL HIGHER-OUTPUT A-C GENERATING SYSTEMS KEEP BATTERIES UP —COSTS DOWN . . . SUPPORT MORE ACCESSORIES!

Way back in March, 1946, Leece-Neville introduced its now-famous, HIGHER-output A-C Generating Systems without fanfare. Today, over three years later, installations on municipal and other vehicles operating under all types of conditions in all parts of the country have conclusively proved three things: 1. These systems keep batteries up; 2. These systems keep costs down; 3. These systems support the use of more accessories. If such *proved* advantages interest you . . . see your nearest Leece-Neville Service Station or write *The Leece-Neville Company, Cleveland 14, Ohio.*

THIS ALTERNATOR is the heart of the popular Leece-Neville A-C Generating System rated at 14 volts—100 amperes. Other 14-volt systems rated at 60, 80 and 150 amperes. For 6-volt circuits, there is a 45-ampere system (convertible to 60) and an 80-ampere system.



LEECE-NEVILLE

Pioneer and STILL Quality Leader

CRANKING MOTORS • GENERATORS • VOLTAGE REGULATORS • SWITCHES

More Motorcycle Purchases

The police motorcycle officer gained a commanding position in the fields of control and enforcement early in the automotive era. This position has been maintained due to the character of the men selected for this service and the continual improvement of the equipment. The season for the purchase of motorcycles is the year around, and during the last year over 700 police departments added Harley-Davidsons to their forces. A new folder lists hundreds of cities using them and contains photographs of motorcycle squads of seven important departments. Address Harley-Davidson Motor Co., Milwaukee 1, Wis. Below are given some typical recent additions in a city of each of the principal population groups.

Cleveland, Group 1: over 500,000. Eleven new motorcycles.

Oklahoma City, Group 2: 200,000-500,000. Five new solos and their Servi-Cars.

Worcester, Mass., Group 3: 100,000-200,000. Three solos and a Servi-Car.

San Jose, Calif., Group 4: 50,000-100,000. Eight new Motorola 2-way motorcycles.

Alexandria, Va., Group 5: 25,000-50,000. Four new solos.

Mayor Dennis J. Roberts of Providence, R. I., examines the press-to-talk microphone on one of the 2-way FM motorola radio equipped Servi-Cars, as (left to right) Commissioner Benjamin McLyman, Chief of Police Charles H. Higgins, and Commissioners Edward Casey and Joseph C. Scuncio look on. The entire motorcycle fleet of 23 Harley-Davidson solo motorcycles and 4 Servi-Cars is thus equipped.

Many Maintenance Jobs Using One Machine

A PG-10 equipped with a 10-foot angling blade and bulldozer.

MB one-man maintainers and graders, powered by International H, M, or MD (diesel) tractor engines and equipped with hydraulically operated angling blades, provide a fast, low-cost means of maintaining secondary dirt and gravel highways. With these blades and other attachments such as sweepers, scarifiers, front-end shovels, and snow plows, they do such other jobs as grading, mixing blacktop, ditching, scarifying, dirt-filling, sweeping, snow removal.

Speeds forward of the Model 30, powered by the H engine, is 2.5 to 15.7 miles; the Model PG 10, powered by the larger M or MD engines, achieves speeds of 2.63 to 16.5 miles per hour. Reverse speeds are 2.9 for the 30 and 3.13 for the PG 10.

The maintainer is manufactured by the Meili-Blumberg Co., Box 110, New Holstein, Wis.

In considering replacement vs. reconditioning of a 53 year old line carrying Water to Chula Vista and National City, Calif., the California Water and Telephone Company decided to recondition the line since replacement in addition to the tremendous cost would have meant disturbing many acres of valuable citrus and vegetable fields.

Reconditioning involved a thorough cleaning by National of over 15,000 feet of 24 inch line, after which the entire line was centrilined.

According to information received, the reconditioning has added at least 20 years more of useful life with a marked increase in the volume of water previously handled.

Our engineers will gladly submit facts and figures on how National has solved similar problems for other utilities. Why not write today?

31

NATIONAL WATER MAIN CLEANING CO., 50 Church St., N.Y. 7, N.Y.

ATLANTA, 333 Candler Building • ATLANTA, 1221 Mortgage Guarantee Building • BOSTON, 115 Peterboro Street • CHICAGO, Room 1336, 122 So. Michigan Avenue • FLANDREAU, S. D., 315 No. Crescent Street • KANSAS CITY, 422 BMA Building • LITTLE FALLS, N. J., Box 91 • LOS ANGELES, 448 South Hill Street • OMAHA, 3812 Castellar Street • RICHMOND, 210 East Franklin Street • SALT LAKE CITY, 149-151 W. Second So. Street • SAN FRANCISCO, 681 Market Street • SIGNAL MOUNTAIN, TENN., 204 Slayton Street • WACO, P. O. Box 887 • MONTREAL, 2028 Union Ave. • WINNIPEG, 576 Wall Street • HAVANA • MAYAGUEZ, PUERTO RICO • BOGOTA • CARACAS • MEXICO CITY

PUBLIC GOOD

Folks, waiting at transfer points, would relish a drink of cool water fresh from the main.

And what about the drinking water facilities around neighborhood play centers?

Additional installation of Hydrants and Outdoor Drinking Fountains are definitely in the public interest.

"It Pays to Buy MURDOCK."

The Murdock Mfg. & Sup. Co.
426-430 Plum St., Cincinnati 2, Ohio

MURDOCK

TABLETS OF ENDURING BEAUTY

MARK buildings . . . record deeds and heroes . . . let NEWMAN PLAQUES of bronze or aluminum emblazon names in immortal beauty. NEWMAN has been famous internationally since 1882 for tablet perfection.

WRITE TODAY For Tablet Catalog. Absolutely no obligation

NEWMAN BROTHERS, Inc.
659-665 W. 4th St. Cincinnati 3, O.
Members: National Memorial Bronze Ass'n.

TERRITORY OPEN

Manufacturer of equipment used by Public Works Department of cities, with some demand by counties and states, has eastern territory open for live, aggressive man.

Straight commission. Good producing territory.

Address Box 318
THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.

Using the 5-HP GRAVELY
IS LIKE HAVING
EIGHT MORE MEN
On Your Maintenance Crew

Yes, City records *prove* that the Powerful 5-HP GRAVELY Tractor with its 17 attachments does the work of eight men. . . . Some of these attachments listed below will help you cut your city's maintenance costs:

30-Inch Lawn Mower
72-Inch Gang Mowers
42-Inch Sickle Mower
50-Gallon Sprayer
Power Sweeper
Snow Plow
Rotary Plow
Air Compressor

Seventeen attachments are available. Fill out the coupon below for our NEW 1949 Catalog of GRAVELY Equipment. See how the GRAVELY can save your city money—do the work of eight more men! Mail today!

SEND FOR FREE CATALOG TODAY!

GRAVELY MOTOR PLOW AND CULTIVATOR COMPANY
BOX 775, DUNBAR, WEST VIRGINIA

☐ Send Catalog and Prices

Name ..... Title .....
Address ..... Zone..... City .....
County ..... State .....

17 YEAR-ROUND TIME-PROVED ATTACHMENTS

DISTRIBUTORSHIP WANTED

Sales Engineer with fifteen years' experience now organizing own business in southern New England, interested in securing distributorship for municipal supplies and industrial maintenance or material handling equipment.

Write:

Box 319
THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.

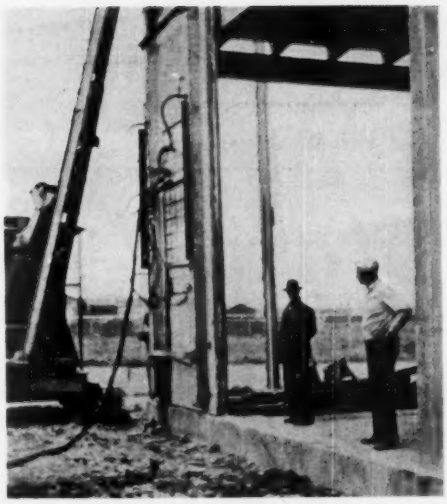
470 FOURTH AVE., NEW YORK 16, N. Y.

Is Information Headquarters

for municipal, waterworks officials, and engineers wanting further details on printed matter from the manufacturers advertising in these pages. Our Reader Service Department will be glad to forward any literature or special requests you mail to us at the above address.

THE AMERICAN CITY

New Lightweight Building Wall



A corner panel in the process of installation at the Hobbs Glass building, Trois Rivieres on the St. Lawrence, in Canada. This is the first wall panel building in the world using the combination of PC Foamglass and concrete.

A curtain wall of cellular glass and concrete that is readily constructed, inexpensive, and can be re-used if necessary is being offered by the Pittsburgh Corning Corp., Pittsburgh, Pa. The new building wall offers possibilities of making revisions easier in public buildings or giving the opportunity of wider revisions in room layout in new buildings.

The new insulated wall panels are made in-the-flat in any practical size. The popular thickness is 6 inches; this consists of a 2-inch cellular glass core with 2-inch exterior and interior veneers. This is less than half as thick as the conventional masonry wall. However, it may be made any thickness consistent with sound practice..

Essential to the success of this panel wall is the use of rigid and durable cellular glass permanent insulation, marketed as PC Foamglass. Concrete veneers, processed by heavy mechanical troweling, steam curing, and vacuum processing also are important. The exterior and interior faces require no additional finishing unless desired.

The panel wall has sufficient strength to resist forces three or four times the wind lond limit. Its light weight yields important economies in foundation costs, skeleton frame, erection time and handling costs. The popular 6-inch panel wall weighs from 40 to 60 pounds per square foot, or about one-third as much as the typical masonry wall.

Lightweight Tractor

The Osco "65" tractor, with automatic clutch and self-energizing rear-wheel brakes, may be used not only with plows, discs, cultivators, and field mowers, but also for boom-spray pumps, 3- and 5-gang mowers, or a rotary snow plow—a year-around tractor for accomplishing the smaller jobs that arise in municipal parks or a street-maintenance department.

Equipped with draw bar, draw bar lift, and power take-off, the tractor can accommodate either stationary or swinging tools. Three speeds forward and one reverse add to its maneuverability.

The engine is 4-cycle, using about 2½ gallons for an 8-hour day of work. It is manufactured by the Osco Motors Corp., 2020 E. Orleans St., Philadelphia.

ROLL YOUR OWN TRAFFIC LINES

with the new, easy-to-use economical and lightweight

LITTLE GIANT HANDI-LINER

THE SPEEDY HAND-OPERATED LINE PAINTER

*pat. pending

The new "Little Giant" Handi-Liner is used and endorsed by government agencies, state and municipal road commissions and leading business organizations. Saves time and money. Paints perfect traffic lines almost as fast as operator can walk. Long-lasting, sturdy. No moving parts to get out of order. Uses any good traffic paint.

only $24.50 complete

Highest quality Line-marking Paint: white, $2.70 gal. Yellow, $2.85 gal. F.O.B. Baltimore, Maryland.

ORDER TODAY! 2-year guarantee should last a lifetime!

WRITE FOR CIRCULAR & ADDITIONAL INFORMATION

LASTING PRODUCTS CO.

paint manufacturers

Franklintown Rd. Plant Balto. 23, Md.

ASPHALT costs MONEY

Save it with the

FOOTE Kinetic ASPHALT MIXER

Asphalt is the expensive item in your patching, driveway, water-proofing and other asphalt mix problems. Because of the unusual mixing method employed by the Foote Kinetic Mixer you can get 8 to 10 batches more out of each barrel of asphalt. The design of the converter blade and cross mixing blades sets up a mulling action and forces the faster moving materials through the slow ones. In addition, the asphalt is introduced *under pressure* into the middle and *within* the aggregate stream. This assures every particle being coated completely and delivers a mix that no other small mixer of any type can equal with outstanding saving in asphalt. Write for Bulletin K-100. It tells the whole story.

- 3 cu. ft. in 30 seconds.
- High output for low investment
- Handles any cold mix without auxiliary equipment. Can handle hot mixes in conjunction with kettles.
- Fully portable.
- How mixing principle thoroughly coats every particle of aggregate. Gives you 8 to 10 more batches out of every barrel of asphalt.

the FOOTE Kinetic mixer

A BLAW-KNOX PRODUCT

THE FOOTE CO., INC.

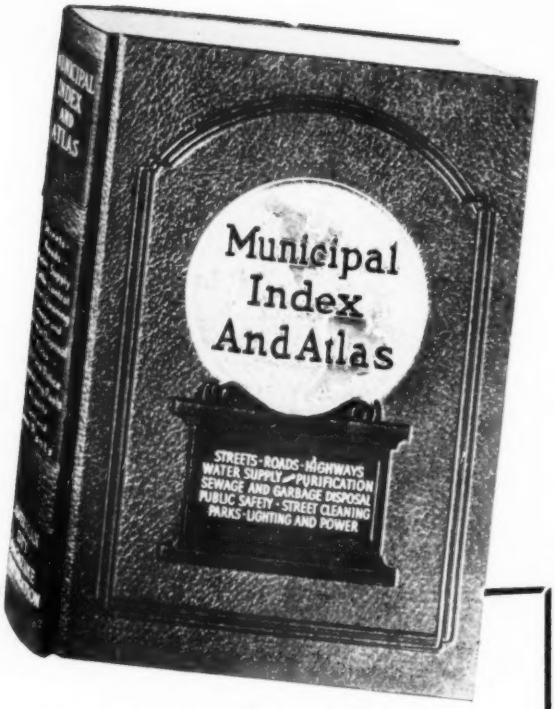
Subsidiary of Blaw-Knox Co.

1958 State St. • Nunda, New York

Have you seen the 1949 edition of the

Municipal Index

?


Municipal Index And Atlas
STREETS · ROADS · HIGHWAYS
WATER SUPPLY · PURIFICATION
SEWAGE AND GARBAGE DISPOSAL
PUBLIC SAFETY · STREET CLEANING
PARKS · LIGHTING AND POWER

Here is one of many enthusiastic letters which we have received since its distribution.

CITY OF JOHNSON CITY
TENNESSEE
February 17, 1949

Mr. Alfred M. Heiser, Secretary
The Municipal Index
470 Fourth Avenue
New York 16, New York

Dear Sir:

The advertisements in the Municipal Index are probably of more value to us than anything else in the book. In the list you issue, information is added yearly; others are dropped. City men not formerly listed here, a few places of city government, etc. Of course the Municipal Index is a tremendous time and correspondence saver in handling matters of supply.

We find ourselves constantly referring to the Index of officials and the handy maps.

Thank you very much for our copy of this valuable book.

Very truly yours,

D. L. Leonard

D. L. Leonard, City Manager

DLL:tt

The Municipal Index

470 Fourth Avenue **New York 16, N. Y.**

Aluminum Soil Pipe Is Light and Strong

The 2-, 3-, and 4-inch aluminum soil pipe and fittings manufactured by the General Aluminum Supply Corp., Rialto Bldg., Kansas City 6, Mo., are for above-ground installations — venting, waste, drainage, stacks, and downspouts.

Light in weight, resistant to corrosion, these products have great impact strength and are easy to cut by cold chisel, cutting tool, or hack saw.

Since they are light, less lead is required in caulking (less weight to support) and Gasco hubs do not split when caulked. Other advantages resulting from the light weight is that they are easier to handle in awkward places, and easy to carry; entire soil pipe stacks can be prefabricated on an assembly-basis at one central location or shop, carted completely caulked and assembled to each job site, unloaded by one man, and positioned and installed by one journeyman.

The wall thickness is even, all pipe and fittings are chemically coated inside and out to make them acid and alkaline resistant; aluminum does not rust. Gasco is completely interchangeable with extra-heavy iron pipe, and iron fittings may be used along with the aluminum pipe.

Mathieson Appointments

D. W. Drummond **S. L. Nevins**

As a result of the retirement of E. E. Routh as vice-president and director of sales for the Mathieson Chemical Corp., 60 E. 42nd St., New York 17, N. Y., the following changes have been made in its sales department executive staff: D. W. Drummond has been named vice-president, director of industrial chemical sales, and S. L. Nevins has been appointed vice-president, director of agricultural chemical sales.

All heavy chemicals including sulfric acid will be handled by the industrial chemical sales department and all agricultural chemicals which have been added as the result of the recent acquisition of the Southern Acid and Sulphur Company and the Standard Wholesale Phosphate & Acid Works, Inc., will be under the direction of the agricultural chemical sales department of the company.

Other appointments are: J. O. Logan, sales manager, industrial chemicals, R. J. Quinn, assistant sales manager, industrial chemicals, and L. P. Thomas, southwestern sales manager of industrial chemicals. J. S. Whittington has been made sales manager of agricultural chemicals.

GMC Organization Changes

The following personnel promotions have been announced by the General Motors Corp., Pontiac, Mich.:

R. C. Woodhouse has been promoted to the position of assistant general sales manager of the Truck Division; R. E. Holsaple, Metropolitan sales manager in charge of GMC's four retail operations in Chicago; G. R. Blackburn, zone manager in Charlotte, N. C.; A. B. Campbell, to head the sales organization and analysis department at the GMC factory in Pontiac; W. P. Smith, retail store manager in Cleveland succeeding Glenn G. Bennett who has resigned to take a GMC dealership in Phoenix, Ariz.

Another **"Warren Pipe"** line soon to be paying dividends to its owners through years of carefree service — buried and in service, it's the "forgotten man" of your water system, on duty 24 hours each day, year after year.

Warren cast iron pipe and fittings can be supplied in sizes 2" to 84" with all types of joints and in accordance with standard specifications.

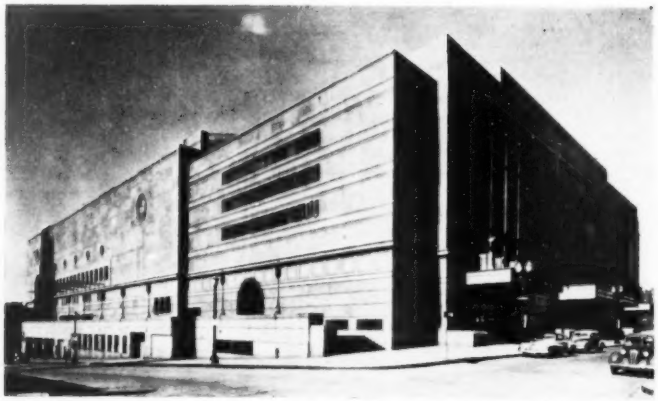
CAST IRON PIPE **CAST IRON PIPE FITTINGS**

GREY IRON CASTINGS

SPECIFY "WARREN PIPE"

WARREN FOUNDRY & PIPE CORPORATION
11 BROADWAY, NEW YORK, N. Y.

WARREN PIPE COMPANY OF MASS., INC.
75 FEDERAL ST., BOSTON, MASS.



COME

to the 55th Annual Public Works Congress and Equipment Show

at the Kansas City, Missouri Municipal Auditorium September 18-21, 1949

At the Conference—
City, county, state and federal officials and engineers, and public works contractors, will be interested to hear what's new and best in the public works construction field—including street construction and layout, traffic control, refuse collection and disposal, street cleaning, snow removal, and motorized equipment. Informal round-table groups will discuss in addition, such subjects as personnel, organization, public relations and public works planning and financing.

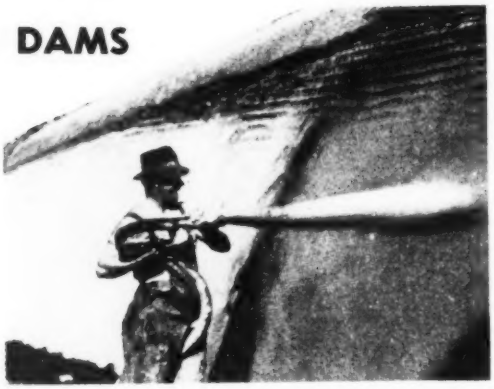
At the Equipment Show—
More than ninety manufacturers and distributors will display and demonstrate hundreds of pieces of equipment—machinery for every conceivable public works need. Here you can examine and select the equipment and materials that will help you improve efficiency and reduce costs.

An Additional Attraction
will be a tour of public works installations in the Kansas City area.

Best of all, perhaps,
is the opportunity this congress presents to you for contacting other public works men and swapping experiences with them.

For reservation, write or wire: ***American Public Works Association*** *1313 E. 60th St., Chicago 37, Ill.*

DAMS

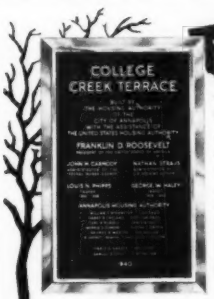


repaired speedily with "GUNITE"

This stone masonry dam was badly in need of repair. A 3-inch facing of reinforced "GUNITE" has resulted in a completely resurfaced structure, stopped extensive leakage, reduced maintenance costs sharply, and added years to the life of this dam. Our engineers will gladly inspect your dam and give repair-costs estimate. No obligation.

Write for 48-Page Gunite Booklet

PRESSURE CONCRETE CO.
193 EMMETT ST., NEWARK 5, N. J.
33 N. LA SALLE ST., CHICAGO 2, ILL. • 315 S. COURT ST., FLORENCE, ALA.



your city deserves the best—
UNITED STATES BRONZE TABLETS...

for signs, statues, cornerstones, homes, hospitals, schools, municipal buildings

One of the country's largest plants devoted exclusively to bronze tablet work assures you of the *finest* in bronze at *lowest* prices. Free samples, sketches, estimates—prompt mail service. WRITE TODAY FOR FREE CATALOG!

"Bronze Tablet Headquarters"
UNITED STATES BRONZE SIGN CO., INC.
570 Broadway, Dept. AC, New York 12, N. Y.

HUSSEY SAFE SEATING

PORTABLE STEEL BLEACHERS AND GRANDSTANDS

The safe and economical solution for your outdoor and indoor seating problems. Our engineering staff is at your service without cost or obligation to you.

FREE
Write for illustrated folder and prices today.

Hussey Mfg. Co., Inc. • 487 R. R. St. • N. Berwick, Maine
Also manufacturers of Laughing Loon Water Sports Equipment

New Type Product Kills Weeds, Brush

W. W. Allen, chemist for the American Chemical Paint Co., keeps his distance from the poison ivy plant in the left-hand picture. A month later, and the poison ivy has lost its sting.

The American Chemical Paint Co., Ambler, Pa., has produced in its Weedone Brush-Killer 32 a double-threat to both weeds and brush.

According to the company the new product, an ester of 2,4-D and 2,4,5-T, is less harmful to near-by vegetation than any commercial ester on the market and still gives an excellent kill on over 85 different varieties of woody plants. The product mixes with oil or water for airplane, low-volume, or high-volume commercial sprayers.

Walter Motor Truck Makes Appointments

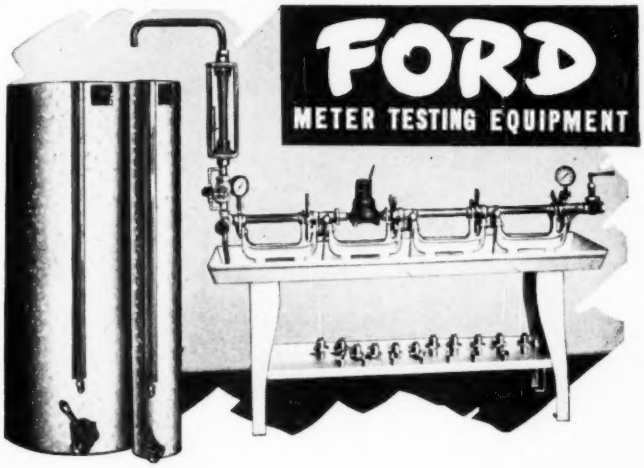
Clinton A. Misson **Maurice Walter**

Following the recent death of L. G. Stelzle, former president of the Walter Motor Truck Co., Ridgewood 27, Queens, L. I., N. Y., Clinton A. Misson has been named president and director, and Maurice Walter continues as vice-president and has been elected chairman of the board of directors.

Mr. Misson, who graduated from the U. S. Naval Academy in 1921 and finished post graduate work in Carnegie Institute of Technology, served in the U. S. Navy until May 1949. He has a distinguished war record. It includes engagements at Eniwetok and Saipan.

Associated with the company for 30 years, Mr. Walter, son of the originator of the company, has acted in the capacities of chief engineer and vice-president.

The Walter Motor Truck Company was founded 40 years ago; it specializes in the production of heavy-duty, Four Point Positive Drive motor trucks for highway and airfield snow removal, fire and rescue work, and for off-the-road hauling.



FLEXIBLE . . . *for any size shop*

Ford testing equipment is completely flexible in that it offers utmost economy of testing in any size shop.

FREE . . . .
Complete Ford catalog No. 50 of time and money saving meter equipment

Whether you test meters one at a time or in batteries of 10 or more, Ford provides complete accuracy, fast changing and easy visibility. Ford eliminates scales, weights and percentage beams and guess work.

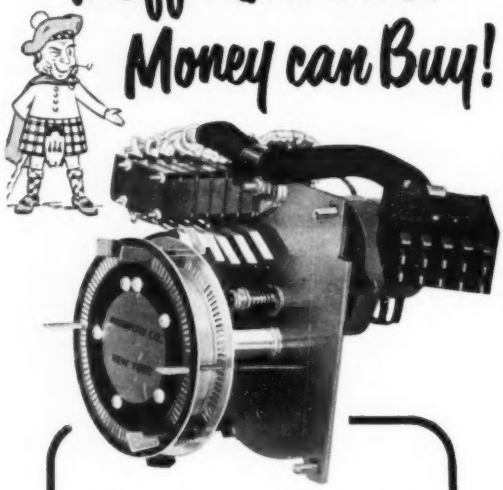
Just tell us about your testing shop and we show you how to save time and money. No obligation, of course.

THE FORD METER BOX COMPANY, INC.

FOR BETTER WATER SERVICES FORD

Wabash, Indiana

Niftiest, Thriftiest Traffic Controller Money can Buy!



YEARS AHEAD IN DESIGN . . . *it's designed for the years ahead!* Think of it . . . You can provide *today* for all future expansion of your traffic control system. One Marbelite "foundation" installation *now* . . . to meet your immediate needs. Then, whenever you please, simply add one or more MARBELITE *jack-connected Dials.*

Specify MARBELITE "MULTI-DIAL CONTROLLERS" . . . with the Marbelite Unit-Dial.

THE MARBELITE COMPANY, INC.
27 WARREN STREET, NEW YORK 7, N. Y.

GENTLEMEN:
Please send me complete details of *Marbelite* Multi-Dial controllers providing for future expansion.

Name .....
Address .....
City ..... Zone .....
State .....

THE MARBELITE COMPANY, INC.

SALES

REPRESENTATIVES WANTED

Our NEW item appeals to economy-minded officials in municipal, county and state offices. Many fine territories open. Liberal commission. Full cooperation.

SEE OUR AD ON PAGE 68

COUNTY SPECIALTIES P. O. Box 626, PORT CHESTER, N. Y.

MUST SELL AT ONCE!

11,000 ft. good-as-new 8" Bell & Spigot Cast Iron Pipe from government water distribution system in 18 Ft. lengths, Class 200. Our Contract time has expired. 95c per foot.

Also crosses, elbows, tees, fittings, etc.
Write, Wire or Phone

SOUTHWESTERN LUMBER COMPANY

7437 South Western Ave. Chicago 36, Ill.
Phone: Grovehill 6-5656

WATER SUPERINTENDENT Wanted

Fast growing Colorado City of 20,000 population has opening for water works superintendent with five or more years experience in operation of complete system. Good salary, location and climate.

Answers should give age, past experience, qualifications, recommendations and other usual information.

Address Box 2317

THE AMERICAN CITY
470 Fourth Avenue New York 16, N. Y.

THE MUNICIPAL INDEX

Saves your catalog from the wastebasket. It reaches the buyer when he's buying.

Approximately 16,000 city and town officials and private water company superintendents who receive the annual Municipal Index use it regularly as a buying guide.

THE MUNICIPAL INDEX

470 Fourth Avenue New York 16, N. Y.

Tractor Attachments

New equipment that helps to make the Ford tractor more useful as a municipal tool is the Trac-Lift built by the Hackney Iron & Steel Co., Enid, Okla.

The Trac-Lift may be fitted with a bull-dozer blade or a loading platform. If it is used with the latter it performs valuable service in unloading heavy materials such as sacks of cement, oil drums, sacked chemicals. The Trac-Lift shown in the photograph has a bulldozer-blade attachment. At the rear of the blade is mounted an Auburn Machine Works ditcher used for such tasks as laying water and sewer service pipe. The bulldozer blade can be used for backfilling when the service is in place.

A Ford tractor with a Trac-Lift mounted front and an Auburn ditcher in the rear.

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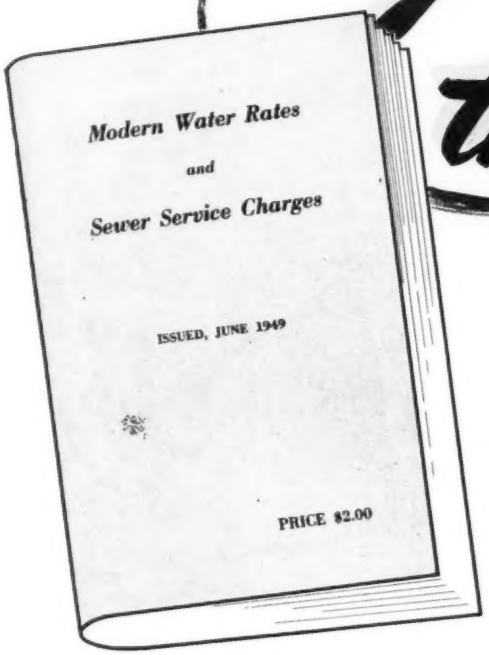

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Aero Service Corp. 47
Affiliated National Hotels. 56
Allis-Chalmers Tractor Div. 26, 42, 43
American Bitumuls Co. 178
American Casting Service. 176
American Coach & Body Co. 77
American Public Works Assn. 188
American Tel. and Tel. Co. 4
Architects, Landscapes. 193-199
Armstrong Associates. 193
Athey Products Co. 34
Austin-Western Co. 59
Automatic Voting Machine Corp. 174

B & B Engineering. 193
Badger Meter Mfg. Co. 65
Baker Mfg. Co. 62
Barber-Greene Co. 37, 38, 39, 40
Bennett Mfg. Co. 143
Bintz, Wesley. 193
Black & Veatch. 193
Braxmar Co., Inc., C. G. 161
Briggs & Stratton Corp. 30
Buck, Seifert & Jost. 193
Buffalo Meter Co. 191
Burns & McDonnell Engineering Co. 193
Business Research Corp. 194
Byron Jackson Co. 6

Cataphote Corp. 177
Caterpillar Tractor Co. 12
Cement Gun Co. 157
Champion Corp. 52
Chicago Bridge & Iron Co. 10
Circul-Air Corporation. 191
Cleminshaw Co., J. M. 194
Cloroben Corp. 181
Clow & Sons, James B. 165
Coff, L. 194
Cole-Layer-Trumble Co. 194
Cole Mfg. Co., R. D. 67
Columbia Sign & Signal Corp. 176
Consoer, Townsend & Associates. 194
Consulting Engineers. 193-199
County Specialties. 68
Crouse-Hinds Co. 132

Damon & Foster. 194
Day & Zimmerman, Inc. 194
De Laval Steam Turbine Co. 164
De Leuw, Cather & Co. 195
Dempster Brothers, Inc. 154
Dexter, Gregory M. 195
Dick Co., A. B. 168
Dickinson Co., Albert. 48
Dixie Tank and Bridge Co. 52
Dolge Co., C. B. 180
Drott Mfg. Corp. 33
Dual Parking Meter Co. 138
Duncan Meter Corp. 142

Electrical Testing Laboratories, Inc. 195
Expanding Sewer Machine Co. 48

Fisher & Assoc., Leigh. 195
Fisher Research Laboratory, Inc. 145
Flexible Sewer-Rod Equipment Co. 151
Flood & Co., Walter H. 195
Foote Co., Inc. 185
Ford, Bacon & Davis. 195
Ford Meter Box Co. 189
Fulton Bag & Cotton Mills. 155

Gamewell Co. 14
Gannett, Fleming, Corddry & Carpenter, Inc. 195
General Electric Co. 78, 79, 126, 130, 146
Gerdau Co., Otto. 181
Globe Phone Mfg. Corp. 44
GMC Truck & Coach Div. 170
Good Roads Machinery Corp. 72
Griffenhagen & Associates. 196
Gunite Concrete & Construction Co. 52
Gunite Construction Corp. 68
Gravely Motor Plow & Cult. Co. 184

Hand Laboratory. 50
Hardie Mfg. Co. 179
Harley-Davidson Motor Co. 166
Hazard Insulated Wire Works. 36
Heil Co. 67
Holmes & Narver. 196
Hersey Mfg. Co. 45
Homelite Corp. 41
Horan Co., George B. 196
Hotpoint, Inc. 160
Hough Co., Frank G. 66
Hoyt Associates, Homer. 196
Hussey Mfg. Co., Inc. 188
Hyatt, Chauncey A. 196
Hydrauger Corp., Ltd. 180

International Harvester Co. 73
International Meters, Inc. 144
Iowa Valve Co. 165

Jacobs & Co., J. L. 196
Jaeger Machine Co. 44
Johns-Manville. 46
Jones Co., James. 60
Jones Co., John Wiley. 50
Joslyn Mfg. and Supply Co. 124

Karpark Corp. 134
Kennedy, Clyde C. 196
Kennedy Valve Mfg. Co. 169
Kelly-Creswell Co. 149
Klett Mfg. Co. 44
Koehring Co. 70
Kwik-Mix Co. 71

Laboratories, Testing. 193-199
Lake Shore Markers Div. 60
Lasting Products Co. 185
Layne & Bowler, Inc. 31
Leadite Co. 52
Leaf Loader Div., American Structural Steel & Tank Co. 177
Leece-Neville Co. 182
Line Material Co. 122
Little Giant Products, Inc. 163
Littleford Brothers, Inc. 180
Lochner & Co., H. W. 197
Lock Joint Pipe Co. 152
Lockwood, Kessler & Bartlett, Inc. 197
Ludlow Valve Mfg. Co., Inc. 55
Luria Engineering Corp. 141

Mack Mfg. Corp. 61
Magee-Hale Park-O-Meter Co. 136
Mak-A-Sign Co. 68
Marbelite Co. 190
Martin Machine Co. 68
McCulloch Motors Corp. 35
McCurdy Sand & Water Separator Co. 145
McDonald Mfg. Co., A. Y. 173
McFadzean, Everly & Assoc. 197
McWane Cast Iron Pipe Co. 180
Meili-Blumberg Corp. 74
Metcalf Bros. & Co. 60
Metcalf & Eddy. 197
Mi-Co Meters. 28
Miro-Flex Co. 58
Modern Mfg. Co. 173
Motorola Inc. 202
Muddeman & Assoc., John M. 197
Municipal Supply Co. 161
Murdock Mfg. and Supply Co. 184

Nadig, Henry Davis. 197
National Clay Pipe Mfrs., Inc. 49
National Supply Co. 76
National Water Main Cleaning Co. 183
Neptune Meter Co. 80
Netco Div., Clark-Wilcox Co. 175
New England Survey Service, Inc. 198
Newman Brothers, Inc. 184
Nordberg Mfg. Co. 64
Northern Gravel Co. 44
Nutting Co., H. C. 198

Pacific Gas Corp. 57
Parsons Co. 71
Parsons, Brinckerhoff, Hall & MacDonald. 198
Peerless Pump Div. 171
Permutit Co. 162
Pitometer Co. 198
Pittsburgh-Des Moines Steel Co. 51
Pittsburgh Equitable Meter Div. 63
Pittsburgh Plate Glass Co. 167
Pittsburgh Testing Laboratory. 198
Portland Cement Association. 158
Potts, Clyde. 198
Premax Products Div. 157
Pressure Concrete Co. 188
Prismo Safety Corp. 128

Quinn Wire & Iron Works. 60

Ranney Method Water Supplies, Inc. 165
Remington Rand, Inc. 172
Revere Electric Mfg. Co. 153
Rhodes, Inc., M. H. 156
Robert and Co. Associates. 198
Robinson Standard Aerial Surveys, Inc. 198
Ross Valve Mfg. Co., Inc. 149
R. P. B. Corp. 163
Russell & Axon. 199
Ryerson & Son, Inc., Joseph T. 8

Sanitary Engineers. 193-199
Schoonmaker Co., Inc., A. G. 50
Seagrave Corp. 140
Seelye, Stevenson & Value. 199
Simplex Valve & Meter Co. 32
Skinner Co., M. B. 24
Smith Mfg. Co., A. P. 22
Solvay Sales Div., Allied Chemical & Dye Corp. 75
Southwest Engineers, Inc. 199
Sparling, R. W. 177
Stancal Asphalt & Bitumuls Co. 178
Stellwagen, Robert H. 199
Stewart Iron Works Co., Inc. 176
Stonhard Co. 50
Street and Traffic Safety Lighting Bureau. 150
Superior Engines. 76

Tarrant Mfg. Co. 153
Tennessee Corp. 48
Texas Co. 2, 20
Toledo Testing Laboratory. 199
Trackson Co. 16
Traffic & Street Sign Co. 67
Turbine Sewer Machine Co. 58

U-C Lite Mfg. Co. 181
U. S. Bronze Sign Co., Inc. 188
U. S. Pipe & Foundry Co. 69
U. S. Testing Co., Inc. 199
Universal Concrete Pipe Co., Inc. 56
Universal Marine & Mfg. Corp. 159

Wallace & Tiernan Co., Inc. Back Cover
Warren Foundry & Pipe Corp. 187
Westinghouse Electric Corp. 148
White Mfg. Co. 48
White Motor Co. 19
Wilkins & Associates, E. T. 198
Williams Gauge Co. 159
Wood Co., R. D. 53
Worthington-Gamon Meter Co. 56

Professional Service Directory—193-199

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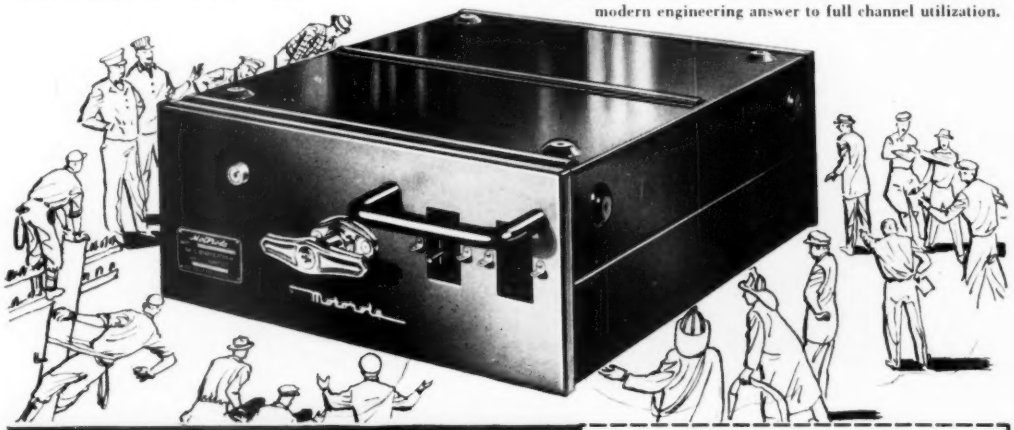

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